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I. Introduction

In September 2012, Mark Ratner underwent a surgical procedure at Massachusetts General Hospital.¹ When Ratner awoke from the surgery, he was afflicted with “confusion, delirium, and hallucinations.”² Ratner’s symptoms got worse as time went on, and he was later readmitted to the hospital and placed with a “1:1 sitter” as part of his treatment plan.³ During one particular manifestation of his symptoms, Ratner became agitated and “grabbed [the sitter’s] arm and twisted it up behind her head.”⁴ When the sitter later sued Ratner for negligently injuring her, he argued that the “delirium” from which he was suffering at the time of the incident should be considered in determining his appropriate duty of care.⁵ Relying on the Third Restatement’s rule concerning the overall standard of liability for negligence, however, the Essex County Superior Court held that Ratner’s mental disability was not a defense to negligence, and that the duty of care that he owed to the sitter was that of a reasonable adult without the disability.⁶

The discourse surrounding mental illness has become more robust throughout the 2010s; most Americans exhibit a generalized awareness of mental disorders and their treatment.⁷ But a much smaller percentage of people believe that the general population is caring and sympathetic

¹ Gioia v. Ratner, No. 1477CV00676, 2016 WL 4729355, at *1 (Mass. Super. Aug. 9, 2016)

² *Id.*

³ *Id.*

⁴ *Id.* at *2.

⁵ *Id.*

⁶ *Id.*

⁷ Over 80% of adults surveyed. Rosemarie Kobau et al., *Attitudes Toward Mental Illness: Results from the Behavioral Risk Factor Surveillance System*, CTRS. FOR DISEASE CONTROL AND PREVENTION 10 (2012), https://www.cdc.gov/hrqol/Mental_Health_Reports/pdf/BRFSS_Full%20Report.pdf.

towards those with mental illness, and those who suffer with symptoms of mental illness are even more skeptical of these attitudes.⁸ Even in countries with more developed systems of mental health care, such as Sweden, almost 25% of those surveyed believe that “people with mental illness commit violent acts more than others.”⁹ In fact, in a 2014 survey, its respondents stated that mental illness carries a greater societal stigma than physical disability.¹⁰

Advancements in neuroscience have the potential to change the way mental illness is viewed, scientifically, practically, and societally. Research which highlights the organic nature of these conditions will challenge the usual perception of mental illness.¹¹ And neuroscientific developments and practices have started to trickle into the law, holding promise for future growth.¹²

As the intersection between neuroscience and the law continues to increase in viability and practice, the use of neuroscience-based evidence and rationales in the criminal courtroom has progressed in a relatively linear fashion, and defendants have “sought to use [this evidence] at all phases of criminal adjudication.”¹³ On the other hand, applications of neuroscience in the civil context have remained largely theoretical.¹⁴ But neuroscience’s ability to transform how the law views a person’s mental state—particularly as it pertains to definitions of “culpability” and

⁸ *Id.* The percentage of people who agree with this proposition increased when compared to a similar 1976 study. *Id.*

⁹ Helia F. Mirnezami et al., *Changes in Attitudes Towards Mental Disorders and Psychiatric Treatment 1976-2014 in a Swedish Population*, 70 *NORDIC J. OF PSYCH.* 33, 38 (2016).

¹⁰ *Id.*

¹¹ See, e.g., Murat Yucel & Dan Lubman, *Neurocognitive and Neumimaging Evidence of Behavioral Dysregulation in Human Drug Addiction: Implications for Diagnosis, Treatment, and Prevention*, 26 *DRUG & ALCOHOL REV.* 33, 34 (2007); J. David Jentsch & Jane R. Taylor, *Impulsivity Resulting from Frontostriatal Dysfunction in Drug Abuse: Implications for the Control of Behavior by Reward Related Stimuli*, 146 *PSYCHOPHARMACOLOGY* 373, 381 (1999) (studies highlighting the organic nature of addiction).

¹² See generally John Cookson, *How Neuroscience is Changing the Law*, *BIG THINK*, (Oct. 1, 2010), <https://bigthink.com/going-mental/how-neuroscience-is-changing-the-law> (highlighting early developments regarding neuroscience in the criminal courtroom and outlining possible future uses).

¹³ Joan M. Eggen & Eric J. Laury, *Toward a Neuroscience Model of Tort Law: How Functional Neuroimaging Will Transform Tort Doctrine*, 13 *COLUM. SCI. & TECH. L. REV.* 235, 237 (2012) (comparing the use of neuroscientific evidence in criminal versus tort law).

¹⁴ *Id.*

“injury”— is just as important in civil cases as it is under the criminal law.¹⁵

The development of this area of study has the potential to remedy a long-standing defect in the law of negligence. As it currently stands, the common law (and statutes) imposes a so-called “bifurcated” approach for adult tortfeasors, where their *physical* conditions may be considered in determining liability, but their *mental* conditions are cast aside.¹⁶ The animating rationale behind this rule is administrative feasibility.¹⁷ Put simply, many believe that it is easier and more effective to establish and litigate the existence of a physical condition as opposed to a mental one.¹⁸ Many have argued in the academic literature for the transformation of this rule, and developments in neuroscience have added a new tenor to their premises.¹⁹ These developments give credence to the idea that mental conditions are “organic” in nature and can be objectively verifiable.²⁰ As such, they should generally be treated akin to physical conditions when it comes to tort liability.

While the overall argument for a neuroscience-based “unification” of physical and mental conditions in tort is welcome, the *solutions* proposed by the current literature are deficient. The most popular solutions call for a standard which mirrors that of physical ailments—that courts should consider “significantly and objectively verifiable” or “demonstrably organic” mental conditions.²¹ Alternatively, scholars have argued that tort law ought to embrace certain exceptions to the objective reasonable standard for those with mental illnesses, impose strict liability on

¹⁵ *Id.*

¹⁶ *Williams v. Hays*, 38 N.E. 449, 450 (N.Y. 1894) (articulating the English common law rationales for the bifurcated rule).

¹⁷ *See, e.g.*, *Hays* at 450; RESTATEMENT (SECOND) OF TORTS §283B (1965).

¹⁸ *Id.*

¹⁹ *See, e.g.*, Harry J. F. Korrell, *The Liability of Mentally Disabled Tort Defendants*, 19 L. & PSYCHOL. REV. 1, 45 (1995) (providing a logical critique of the bifurcated rule); Joan M. Eggen, *Mental Disabilities and Duty in Negligence Law: Will Neuroscience Reform Tort Doctrine?* 12 IND. HEALTH LAW REV. 235, 618-619, (2015) (arguing that the admission of neuroscientific evidence in tort cases can pave the way for a change to the bifurcated rule).

²⁰ *See* Eggen, *supra* note 19, at 633.

²¹ *See, e.g.*, Eggen & Laury, *supra* note 13, at 240; Eggen, *supra* note 19, at 645.

mentally ill tort defendants, and impute knowledge of cognitive diversity on tort plaintiffs.²²

This paper argues that neuroscience supports the notion that physical and mental conditions should no longer be bifurcated for the purposes of adult tortfeasor liability. Additionally, this paper contends that, in order to be sufficiently transformative and commensurate with both the state of neuroscience as well as the legal community's concerns regarding adult tortfeasor liability, requiring a defendant's mental illness to be "objectively verifiable" is too high a standard. Rather, a defendant seeking to show a mental condition should be required to prove by a preponderance of the evidence that he or she suffers from a "significant" condition. Once this standard is met, the court should treat the mental illness like a physical condition for the purposes of determining her relevant standard of care.

Part II of this paper introduces the bifurcated rule as well as its traditional and current rationales. It also examines certain "pre-neuroscience" criticisms of the bifurcated rule. Part III provides an overview of the neuroscientific technology and techniques currently discussed in legal literature, which have the potential to transform adult tortfeasor liability. This part also discusses this technology's potential and criticisms as well as some responses to those critiques. Part IV of this paper examines the most notable issues that arise in the application of neuroscientific principles to adult tortfeasor liability. It further addresses how neuroscientific evidence might tackle some of these concerns, as well as how this evidence might comport with evidentiary principles. Part V introduces the current proposed solutions for "unifying" physical and mental conditions in tort liability and highlights their deficiencies. It then proposes a hybridized standard of proof as to the existence of mental conditions, the showing of a "significant" mental condition by a preponderance of the evidence.. Part VI concludes the paper. It surveys the current and future

²² See Johnny Criscoe & Lisa Lukasik, *Re-Examining Reasonableness: Negligence Liability in Adult Defendants with Cognitive Disabilities*, 6 ALA. C.R. & C.L. L. REV. 1, 18–19.

landscape of tort law and neuroscience, and reiterates that any solution to the issue of bifurcated adult tortfeasor liability must be sufficiently transformative to accommodate the associated public policy issues as well as the nature of neuroscientific evidence as it currently stands and continues to develop.

II. An Introduction to the Bifurcated Rule: History and Perspectives

In order to develop an understanding of how neuroscience can support the transformation of the bifurcated rule, one must first understand the bifurcated rule itself. This section will first explain the origins of the bifurcated rule, and discuss its underpinning justifications, which have persisted from the 1800s to today. It will then provide some “pre-neuroscience” arguments against the bifurcated rule, and address some limited exceptions to the rule that have been promulgated by various courts.

A. The History of the Bifurcated Rule

“The traditional premise for tort liability is fault, or ‘blameworthiness.’”²³ As it pertains to both intentional torts and negligence, fault (or blame) is defined in the context of mental states.²⁴ “The actor in negligence law is always the reasonably prudent person, [and is] judged by that (objective) standard, not what he or she subjectively knew or intended.”²⁵ When it comes to determining the “reasonable person” standard that applies to an alleged adult tortfeasor, the current model in tort law dictates that mental conditions are irrelevant. In essence, an individual who suffers from a mental condition is held to the same standard as someone who does not.²⁶

Tort law, however, allows for adjustments to the “reasonable person” standard in other circumstances. Most notably, where an alleged tortfeasor suffers from a physical disability, that

²³ Eggen, *supra* note 19, at 593 (citing OLIVER WENDELL HOLMES, THE COMMON LAW 109 (1881)).

²⁴ *Id.*

²⁵ Eggen & Laury, *supra* note 13, at 262.

²⁶ See *supra* notes 16–19 and accompanying text.

disability is factored into their relevant standard of care—the reasonableness standard is that of an adult with that same condition.²⁷ Additionally, a *child’s mental condition* is considered for the purposes of determining a child’s applicable standard of care in the same way as a physical condition.²⁸ This inherent inequity in the law, where physical conditions are factored into tortfeasor liability, and mental conditions are not, is often referred to as the “bifurcated rule.”²⁹

Although references to the bifurcated rule extend as far back as the 1600’s, the most commonly cited source for the rule is *Williams v. Hays*.³⁰ There, the New York Court of Appeals considered a negligence action where a shipowner accused its shipmaster of negligently allowing the ship to wreck.³¹ The shipmaster had been piloting the ship for two straight days and, under the influence of a large dose of quinine, went to sleep and left the ship in the care of his mates.³² The mates awoke the captain when an emergency arose; the captain then took control of the ship and subsequently crashed it.³³ The shipmaster claimed that he could not be liable for negligence, as the sleeplessness and the quinine had rendered him “unconscious” and “insane” at the time of the accident.³⁴ The Court agreed that the shipmaster “had no free will” at the time of the accident, but nevertheless held that the shipmaster was liable for negligence on the grounds that “[t]he general rule is that an insane person is just as responsible for his torts as a sane person, and the rule applies to all torts.”³⁵

²⁷ *Id.*

²⁸ Eggen, *supra* note 19, at 595.

²⁹ *Id.* at 268.

³⁰ 38 N.E. 449 (N.Y. 1894).

³¹ *Id.* at 446.

³² *Id.* at 445.

³³ *Id.*

³⁴ *Id.* at 446.

³⁵ *Id.* at 446, 454.

The bifurcated rule quickly became entrenched as an irrefutable principle in tort and negligence cases. With some limited exceptions, the rule still almost universally applies today.³⁶ The subjective standard for mental conditions, however, is still applied in certain limited areas of tort, for example, as a means of refuting the defense of “consent to the risk” or, as previously mentioned, as a factor in the formulation of the “reasonable child” standard.³⁷

B. Rationales for the Bifurcated Rule: What’s Old is New

i. The *Hays* Rationales

The *Hays* court elucidated three major public policy rationales in support of the bifurcated rule.³⁸ First, as between two innocent parties, the person who caused the injury must bear the loss.³⁹ Second, public policy favors a rule that encourages persons with an interest in the estate of a mentally ill person to take measures in order to prevent that person from harming others.⁴⁰ And finally, such a rule discourages persons from feigning mental illness to avoid liability for their tortious conduct.⁴¹

ii. Second Restatement Rationales

The stated rationales in support of the bifurcated rule provided by the American Law Institute (ALI) in the Second Restatement of Torts, which was published in 1965, do not materially vary from those advanced by *Hays* and related cases in the late 1800s. The Second Restatement’s bifurcated rule rationales include: (1) the difficulties in distinguishing “mental deficiency” from “variations of temperament, intellect and emotional balance;” (2) the “ease with which” fabrication of mental illness may occur; (3) the need to, if those with mental conditions “are to live in the

³⁶ See, e.g., *McIntyre v. Sholty*, 13 N.E. 239, 340 (Ill. 1887) (explaining that “[i]t is well settled that, though a lunatic is not punishable criminally, he is liable for a civil action for any tort he may commit”).

³⁷ *Eggen*, *supra* note 19, at 601–02.

³⁸ *Hays*, 38 N.E. at 447–50; *id.* at 598.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.*

world,” compensate persons they injure; and (4) the encouragement of caretakers to prevent those with mental conditions from doing harm to others.⁴²

iii. Third Restatement Rationales

In recent years, the ALI has backed away somewhat from its 1965 rhetoric, but has continued to stick with the bifurcated rule.⁴³ “To be sure,” the ALI acknowledges in a comment on its most recent Restatement of Torts, “modern society is increasingly inclined to treat physical and mental disabilities similarly, and this inclination is supported by the recognition that many mental disabilities have organic causes.”⁴⁴ But “the awkwardness experienced by the criminal-justice system in attempting to litigate the insanity defense” as well as other administrative difficulties, they argue, support the continued retention of the bifurcated rule.⁴⁵ The rest of the comment demonstrates, however, that vestiges of the bifurcated rule that date back to 1965, and even 1894, remain powerful. The ALI contends that “[l]imited or moderate mental disorders” are too difficult to evaluate and do not generally account for one’s actions, consideration of mental disability by courts would be too defendant-friendly and that “there can be doubts as to whether the [mentally ill] person should be allowed to engage in the normal range of society’s activities.”⁴⁶

The bifurcated rule was tenuous in nature when it was introduced; as early as 1887, courts acknowledged that “however justly this doctrine may have been subject to criticism, on the grounds of reason and principle,” the bifurcated rule had earned its place as black letter law due to the “weight of authority.”⁴⁷ Continued academic critiques of the rule have only rendered its stability as a doctrine all the more unconvincing today. “The rule continues to be the majority rule

⁴² RESTATEMENT (SECOND) OF TORTS §283B (1965).

⁴³ RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL AND EMOTIONAL HARM §11(c) (2010).

⁴⁴ RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL AND EMOTIONAL HARM §11 cmt. e (2010).

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ Eggen, *supra* note 19, at 599 (quoting *McIntyre*, 13 N.E. at 24).

despite regular criticism over many decades, not because it is a good rule but because it is a familiar and convenient rule.”⁴⁸

C. Traditional Criticism of the Bifurcated Rule

i. Case Studies

Academics have pointed to a wealth of case law which plainly lay out the contradictions and administrative quirks of the bifurcated rule.⁴⁹ In *Johnson v. Lambotte*,⁵⁰ a highly-medicated inpatient, who a hospital was treating for paranoid schizophrenia, escaped the hospital, walked eight blocks, and entered an empty car with the motor running. She drove off in the vehicle and got into multiple accidents, injuring herself and others.⁵¹

In the subsequent personal injury action, the defendant argued that she had no ability to distinguish between what was right and wrong and, therefore, did not act negligently. Although the court judged the defendant to be a “mental incompetent”, it nevertheless applied the bifurcated rule and found the defendant liable, as the applicable standard of care was a reasonable unmedicated person without paranoid schizophrenia.⁵² “Cases such as *Johnson* impose an objective standard—the reasonable person without mental disabilities—on adults with mental disabilities.”⁵³ This, in effect, creates *de facto* strict liability for individuals with mental conditions, because defendants with conditions as severe as the one at hand in *Johnson* are simply unable to comply with the reasonable person standard.⁵⁴

⁴⁸ *Id.* at 595.

⁴⁹ *Id.* at 603–04.

⁵⁰ 363 P.2d 165, 166 (Colo. 1961).

⁵¹ *Id.*

⁵² *Id.*

⁵³ Eggen, *supra* note 1, at 603–04.

⁵⁴ *See, e.g.,* Ramey v. Knorr, 124 P.3d 314, 316 (Wash Ct. App. 2005) (applying the bifurcated rule to a woman who, due to paranoid schizophrenia, thought she was mistaken suspect of a criminal conspiracy and negligently drove a car).

The application of the bifurcated rule along with the exceptions outlined in Section II.A can also lead to strange outcomes. For example, in *Burch v. American Family Mutual Ins. Co.*,⁵⁵ a court did not consider a defendant’s “mental retardation” in determining whether she was liable for plaintiff’s injury when she allegedly caused a pickup truck to lurch backward and hit him. With little discussion, the court held that the bifurcated rule controlled, and defendant did not fit into a narrow Wisconsin exception regarding caretakers of the mentally ill.⁵⁶ That same court, however, found that in assessing whether defendant’s *father* was contributorily negligent, his knowledge of his daughter’s condition could be considered.⁵⁷ The court went into great detail on this issue, explaining because the father, “knowing [his daughter’s] limitations . . . left her alone in the frontseat of the truck with the gearshift in reverse,” he must bear some of the blame for the accident.⁵⁸ Inexplicably, these evident “limitations” were more legally relevant to defendant’s father than the defendant herself.

ii. Refuting the *Hays* Rationales

Even without the use of neuroscientific evidence, critics of the bifurcated rule have offered evidence to refute the proffered rationales of *Hays*. The first such rationale is that, between two innocent parties, the party who caused the injury must bear liability. But this reasoning has been “rejected in nearly every other arena,” and most black letter tort law is based on the principle “that, absent fault (negligence, recklessness, or intention) justifying a shift, loss from an accident must lie where it *falls*.”⁵⁹

⁵⁵ 543 N.W.2d 277 (Wis. 1996).

⁵⁶ *Id.* at 280.

⁵⁷ *Id.*

⁵⁸ *Id.* at 281.

⁵⁹ Harry J. F. Korrell, *The Liability of Mentally Disabled Tort Defendants*, 19 L. & PSYCHOL. REV. 1, 45 (1995) (emphasis added).

The second traditional rationale, that the bifurcated rule encourages caretakers to prevent mentally ill individuals from harming others, is no longer relevant today.⁶⁰ First, negligent supervision doctrines have rendered the need for this rationale mostly obsolete.⁶¹ Second, this rationale “relies on the assumption that custodians are aware of the potential liabilities” implied by the bifurcated rule, when the rule is not widely known and, in fact, is counterintuitive to many.⁶² Finally, this line of logic is simply outdated, reflective of “a time when the treatment of the mentally disabled differed from other methods,” and more rigorous and normative medical treatment of mental illnesses of disorders were uncommon outside of institutionalization.⁶³

The final traditional rationale of the bifurcated rule, that the lack of such a rule would allow those faced with tortious negligence to simply feign mental illness in order to escape liability, is largely based on an irrational fear.⁶⁴ In the criminal law, the insanity defense is rarely invoked by defendants, despite the fact that it would arguably be more valuable to feign mental illness in this context given the liberty interests at hand.⁶⁵ In fact, the percentage of criminal defendants (1-2%) that invoke the insanity defense is consistent with the estimated percentage of the population who actually suffer from chronic, severe mental illnesses.⁶⁶ And further studies indicate that those who plead the insanity defense are in fact mentally ill.⁶⁷

This rationale also fails to take into account that there are numerous deterrents to feigning mental illness in a legal context. Feigning mental illness would not only open oneself up to the pervasive societal stigmas associated with a public diagnosis, but would also allow for the possible

⁶⁰ *Id.* at 29.

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.* at 29–30.

⁶⁴ Elizabeth J. Goldstein, *Asking the Impossible: The Negligence Liability of the Mentally Ill*, 12 J. CONTEMP. HEALTH L. & POL’Y 67, 75 (1995) (explaining that the “[f]ear of widespread feigning of mental illness is unfounded”).

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.* at 76.

use of mental health evidence in civil commitment proceedings.⁶⁸ Even if all of these mitigating factors are discounted, courts already distinguish “legitimate from non-legitimate claims of cognitive disability” in other contexts, such as “contract, probate, health care, family law, criminal law, and [negligence cases involving children].”⁶⁹

iii. Judicial Pushback to the Bifurcated Rule

A few courts have recognized the inherent problems of the bifurcated rule and promulgated limited exceptions, often citing public policy and equitable concerns. Wisconsin has expanded the “sudden incapacitation” defense to negligence, where the onset of a physical condition causes an accident, to mental illness.⁷⁰ And New Jersey and Indiana permit a tort defendant’s mental condition to be factored into the relevant standard of care when the individual is institutionalized for that condition.⁷¹ But these doctrines are usually limited in their scope to specific situations, such as where the plaintiff in a negligence action was defendant’s caretaker.⁷²

III. Enter Neuroscience: Uses, Potential, and Limitations

With an understanding of the bifurcated rule in mind, one can now look to the fundamentals of neuroscience in the courtroom, and begin to observe how these technologies may contribute to the transformation of the rule. This section will briefly trace the development of relevant neuroscientific technologies, optimistically highlighting their potential benefits and drawbacks in the courtroom. It will then highlight tort specifically, explaining how an organic understanding of mental conditions might radically reshape the notion of “the reasonable person”.

⁶⁸ *Id.*

⁶⁹ Criscoe & Lukasik, *supra* note 22, at 30.

⁷⁰ Breunig v. American Family Ins. Co., 173 N.W.2d 619 (Wis. 1970).

⁷¹ See, e.g., Creasy v. Rusk, 730 N.E.2d 659, 666–67 (Ind. 2000) (applying the doctrine in the context of an Alzheimer’s patient who was injured caregivers); Berberian v. Lynn 809 A.2d 865, 873 (N.J. Super. Ct. App. Div. 2002) (same); see also Gould v. American Family Ins. Co., 543 N.W.2d 282, 283 (Wis. 1996) (permitting the consideration of the defendant’s mental condition where caretaker knew or should have known of her condition).

⁷² *Id.*

A. An Introduction to “New Neuroscience”

Although recent developments have shifted the paradigm of possibility in our understanding and study of the human brain, “versions of the brain scan technologies currently capturing the law’s attention have been in use for decades.”⁷³ This technology has “evolved significantly over time, from the basic static x-ray technology to more complicated technologies that seek to understand how various areas of the subject’s brain are functioning in real time.”⁷⁴ Early, more conventional techniques, such as cranial computed tomography (CT) scans and electroencephalograms (EEG), allowed scientists to gain preliminary insights into the structure of the brain and various structural abnormalities, as well as measure so-called “brain waves” by recording the electrical impulses of the brain through electrodes.⁷⁵

B. “New Neuroscience” Technologies

Modern advances in neuroscientific technology, referred to by professors Jean M. Eggen and Eric J. Laury as “new neuroscience”, allow practitioners to hone in on more precise elements of brain function.⁷⁶ A positron emission tomography (PET) scan measures the level of function in various parts of the brain.⁷⁷ This is done by injecting small levels of radioactive chemicals into a subject, and then observing how that radioactivity manifests in different parts of the brain over time.⁷⁸ A single photon emission computed tomography (SPECT) scan marries this technology with a CT scan, making possible three-dimensional modeling of blood flow through the brain’s veins and arteries.⁷⁹ Finally, functional magnetic resonance imaging (fMRI) permits the

⁷³ Eggen & Laury, *supra* note 13, at 240.

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ Henry T. Greely & Anthony D. Wagner, *Reference Guide on Neuroscience*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 747, 801 (2011).

⁷⁸ *Id.*

⁷⁹ *Id.* at 975; Eggen & Laury *supra* note 13, at 240.

observance of real-time brain function by adding blood oxygen levels and the dilation of blood vessels into the pool of simultaneously observable characteristics.⁸⁰ Although there is some debate as to the effectiveness of all these techniques, fMRI is considered to be the most effective brain function measuring technology currently available.⁸¹

Neural imaging has the potential to provide new information concerning the organic nature of mental illness.⁸² Case studies have already emerged, for example, that use fMRI to link abnormalities in certain areas of the brain to addiction⁸³ and schizophrenia.⁸⁴ There is also hope that these technologies could result in more accurate, scientific assessments of pain and emotional distress, which would be useful evidence in proving damages.⁸⁵

C. Three Macro Criticisms of “New Neuroscience”

Critiques of “new neuroscience” technologies and their significance generally hone in on two key issues. The first is the role of scientists in interpreting neuroscientific results, and the second is a tendency by those same scientists to overstate the meaning of those results.⁸⁶ Centered around these concerns, a few more specific criticisms relevant to how neuroscience interacts with the law, as well as responses to those criticisms, are offered here.

i. fMRIs are not Records of Brain Function

⁸⁰ Center for Functional MRI, *What is fMRI?*, UNIVERSITY OF SAN DIEGO SCHOOL OF MEDICINE (2019), <http://fmri.ucsd.edu/Research/whatisfmri.html>.

⁸¹ Eggen & Laury, *supra* note 13, at 241.

⁸² *Id.* at 245.

⁸³ See, e.g., Murat Yucel & Dan Lubman, *Neurocognitive and Neumimaging Evidence of Behavioral Dysregulation in Human Drug Addiction: Implications for Diagnosis, Treatment, and Prevention*, 26 DRUG & ALCOHOL REV. 33, 34 (2007); J. David Jentsch & Jane R. Taylor, *Impulsivity Resulting from Frontostriatal Dysfunction in Drug Abuse: Implications for the Control of Behavior by Reward Related Stimuli*, 146 Psychopharmacology 373, 381 (1999).

⁸⁴ See Gene Ostrovsky, *Scientists Obtain New Functional Imagery of Schizophrenia*, MEDGADGET (2009).

⁸⁵ See generally Michael E. Robinson et. al, *Pain Measurement and Brain Activity: Will Neuroimages Replace Pain Ratings?*, in LAW AND NEUROSCIENCE 350 (Owen D. Jones et al., eds. 2014).

⁸⁶ See Martha J. Farah, *Brain Images, Babies, and Bathwater: Critiquing Critiques of Functional Neuroimaging*, in SPECIAL REPORT: INTERPRETING NEUROIMAGES: AN INTRODUCTION TO THE TECHNOLOGY AND ITS LIMITS, HASTINGS CTR. RPT. S19, S23 (Mar. 2014).

One critique of new neuroscience is that “functional brain images are easily misunderstood as photographs of brain function,” and as a result, their meaning is limited at best, and misleading at worst⁸⁷ In reality, “[an images’] meaning turns on sophisticated interpretational techniques.”⁸⁸ Poor spatial and temporal resolutions of fMRIs often create an imprecise representation of neural activity, leaving neuroscientists to “fudge” the connections between single cell activity and larger brain patterns.⁸⁹ But neuroscience researcher Martha J. Farah, in defending fMRI relevance, offers that “little of what we call science involves direct observation of the subject at interest,” and cosmologists, chemists, and climate scientists often make similar inferences.⁹⁰ “There is indeed a ‘cause and effect’ relationship” she states, “between neural activity and blood oxygenation levels, even if the nature of that relationship is imperfectly understood.”⁹¹

ii. Images of fMRIs are “Researcher Inventions”

The limitations mentioned in the preceding paragraph often require researchers to make decisions pertaining to what activity to represent in visual depictions and how to represent it.⁹² “The worry” among those skeptical of the usefulness of fMRI “is that the images are more researcher inventions than researchers observations.”⁹³ One area of particular concern is the use of color coding and scales to exaggerate certain activity or to draw a correlation where there may not, in fact, be one.⁹⁴ But defenders retort that, while “choices of color scale or contrast affect the

⁸⁷ *Id.*

⁸⁸ Eggen & Laury, *supra* note 13, at 242; Farah, *supra* note 84, at S24 (noting that “it’s a stretch to say that there is a cause and effect to relate this blood surge [measured by fMRIs] to a specific activity”).

⁸⁹ Farah, *supra* note 84, at S20.

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.* at S21.

⁹⁴ *See id.*

salience of certain features[,] . . . this is equally true of other biological images, including micrographs, gels, and Western blots.”⁹⁵

iii. Correlation and Reverse Inferences

Many critics of current neuroimaging studies cite problems with correlation.⁹⁶ In essence, this criticism posits that while it is one thing to localize a behavior to specific parts of the brain, it is another to cite that as an explanation for why and how humans behave.⁹⁷ Farah answers this criticism, in part, with a clarification: new neuroscience largely consists of “methods [which] enable researchers to detect specific mental states and decode how specific stimuli or events are represented in the brain.”⁹⁸ Perhaps, Farah asks, it would be better for such critics to ask if “functional brain imaging [can] contribute to confirming psychological hypotheses in roughly the way behavioral studies do?”⁹⁹ “Many fruitful research programs,” she continues, “answer this question yes in the affirmative.”¹⁰⁰ Indeed, psychologists have used neuroimaging to rule out certain hypotheses regarding the visual system’s involvement in processes relating to the perception of mental images in human memory.¹⁰¹

Many believe that neuroimaging makes too many “reverse inferences,” where a small data point is extrapolated to a larger theory about behavior, when scientific confirmation usually requires the opposite.¹⁰² But these concerns are not unique to functional neuroimaging, and “any technology in which a specific cause is inferred from the presence of an effect . . . could have resulted from other causes.”¹⁰³ So, given the current state of neuroscience, its benefits, and

⁹⁵ *Id.*

⁹⁶ Eggen & Laury, *supra* note 13, at 243.

⁹⁷ *See* Farah, *supra* note 84, at S22.

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ *Id.* at S23.

¹⁰¹ *Id.*

¹⁰² *Id.* at S23.

¹⁰³ *Id.* at S24.

limitations, it is best to think of these technologies as tools in the toolkit for understanding the organic causes of mental illness as opposed to *the* proof in and of itself.¹⁰⁴

D. “New Neuroscience” in Tort: A Prospectus

In beginning to discuss neuroscience’s potential in tort law, it should be noted that the majority of discussion surrounding the subject is purely academic, and there has been little evolution in the way of actual courtroom activity.¹⁰⁵ The area of the law that has seen the biggest impact from neuroscience thus far is criminal justice. Neuroscientific evidence has been used as mitigating evidence in capital crimes, and neuroscience-based rationales have informed Supreme Court decisions regarding minors in the context of sentencing.¹⁰⁶ Neuroimaging research concerning the relationship between violent video games and violent behavior in children was considered by the Supreme Court in a case that involved a challenge to a statute that placed certain age restrictions on video game sales.¹⁰⁷

The common theme in these cases is culpability and the requisite level of punishment associated with that culpability.¹⁰⁸ It may follow that, if neuroscience can show that mental illness is organically caused, courts will be more inclined to impose a level of *civil* culpability commensurate with that condition, as appears to be increasingly common in the criminal law. Of course, the differing stakes in capital crime cases as opposed to civil negligence actions where money damages are at stake may cut against this argument.

¹⁰⁴ Of course, the development of new technologies will blur this line even more. One such technology currently undergoing testing is “brain fingerprinting,” which purports to derive information that has been stored in the brain of a subject through their brain waves. Eggen & Laury, *supra* note 13, at 243.

¹⁰⁵ See, e.g., Stacey Tovino, *Functional Neuroimaging in the Law: Trends and Directions for Future Scholarship*, in *LAW AND NEUROSCIENCE* 26, 27 (Owen D. Jones et al., eds. 2014) (briefly summarizing the scholarly exploration).

¹⁰⁶ See, e.g., *Alabama v. Miller*, 132 U.S. 2455 (2015) (explaining that “brain science continues to show fundamental differences between juvenile and adult minds”); *Roper v. Simmons*, 543 U.S. 551, 578 (2005) (referencing neuroscientific studies in holding that death penalty for a minor at the time of a capital crime is unconstitutional).

¹⁰⁷ *Brown v. Entertainment Merchants Ass’n*, 564 U.S. 786, 852 (2011). The statute was found unconstitutional on First Amendment grounds. *Id.* at 800.

¹⁰⁸ See *supra* notes 98–99 and accompanying text.

But scholars have repeatedly stated that “tort law is likely to be among the first areas of the law impacted by the neuroscience revolution.”¹⁰⁹ Most notably, developments in neuroscience present the opportunity to show that mental disorders are legally tangible and worthy of (civil) judicial consideration. The ALI has recently admitted that many mental disorders have organic causes, but has retained the bifurcated rule for reasons of administrative feasibility and the perceived difficulty in recognizing “actual” mental disorders as opposed to “minor” personality defects or fakery.¹¹⁰ As previously mentioned, the results of some studies indicate these organic causes as it relates to certain mental disorders.¹¹¹

Neuroscience can provide a crucial link between mental illness and culpability. But neuroscience also promises to aid tort law in other realms, such as providing a more precise determination regarding the extent to which a plaintiff may be experiencing pain.¹¹² And some scholars have offered for a more “personalized” reasonable person standard informed by data and neuroscience.¹¹³ They advocate for the ultimate abandonment of an objective standard of care, identifying “several important efficiency advantages,” including furthering the objectives of tort law, corrective and distributive justice, and economic efficacy.¹¹⁴

IV. Is it Possible to Bridge the Gap Between the Current Scientific Methods, Legal Rationales for the Bifurcated Rule, and Evidentiary Principles?

Despite the tremendous promise and excitement neuroscience offers in transforming tort law, a variety of barriers exist to entry. These include the state of the science and how to interpret

¹⁰⁹ Eggen & Laury, *supra* note 13, at 237.

¹¹⁰ See RESTATEMENT (THIRD) OF TORTS, *supra* note 44.

¹¹¹ See *supra* notes 76–79 and accompanying text.

¹¹² See, e.g., Adam J. Kolber, *The Experiential Future of the Law*, 60 EMORY L.J. 585, 608–13 (2011) (discussing the potential role of neuroimaging in compensation for pain in tort); Adam J. Kolber, *Pain Detection and the Privacy of Subjective Experience*, 33 AM. J.L. & MED. 433, 443–49 (2007) (discussing the use of neuroimaging techniques to measure pain and suffering).

¹¹³ Omri Ben-Shahir & Rachel Porat, *Personalizing Negligence Law*, 91 N.Y.U. L. Rev. 627 (2016).

¹¹⁴ *Id.*

the technology, the relationship between neuroscience and evidentiary burdens, psychiatric, philosophical, and societal issues. All of these concerns will be briefly discussed in this Section.

A. Scientific Criticisms of Evidence

When it comes to the use of fMRI studies showing brain abnormalities and the causes of mental illness, there is currently a lack of consensus regarding how to interpret the relationship between the observable Blood Oxygen Level Dependent Imaging (BOLD) and the conclusions made about the brain activity of mental states of subjects.¹¹⁵ Another source of skepticism is the relatively “speculative” nature by which scientists connect brain processes to neuroscientific measurements.¹¹⁶ This criticism is “particularly relevant to the kinds of normative judgment the law makes,” and poses a problem for evidentiary standards which tend to abhor speculation.¹¹⁷

In this vein, others point out the problems that comparing “averages of brain activity” as measured by fMRI pose in the legal context.¹¹⁸ “[T]he best neuroscience may be able to do is to say that, based on [one’s] current mental current mental condition or state, as shown by the current structure or functioning of [one’s] brain, [one is] more or less likely than the average to have had a particular mental state or condition in the time of the relevant event.”¹¹⁹ This concern is linked to another issue often levied at the current state of neuroscience—researchers often have difficulty replicating results over the course of multiple tests.¹²⁰ Beyond worries about the science, neuroscience in the courtroom faces the practical hurdle of cost—as it stands today, the average

¹¹⁵ See Teneille Brown & Emily Murphy, *Through a Scanner Darkly: Functional Neuroimaging as Evidence of a Criminal Defendant’s Past Mental States*, 62 *Stan. L. Rev.* 1119, 1162 (2010). For a brief response to this criticism, see *supra* notes 80–87 and accompanying text.

¹¹⁶ Oliver R. Goodenough & Kristin Prehn, *A Neuroscientific Approach to Normative Judgement in Law and Justice*, 359 *PHIL. TRANS. R. SOC’Y LOND. SERIES B, BIOL. SCI* 1709, 1717 (2005).

¹¹⁷ *Id.*

¹¹⁸ Henry T. Greely & Judy Illes, *Neuroscience-Based Lie Detection: The Urgent Need for Regulation*, 33 *AM. J.L. & MED.* 377, 382 (2007).

¹¹⁹ See *id.*

¹²⁰ See WILLIAM R. UTTAL, *NEUROSCIENCE IN THE COURTROOM: WHAT EVERY LAWYER SHOULD KNOW ABOUT THE MIND AND THE BRAIN* 55–61 (2009).

person could not to put on this type of evidence in an average civil trial.¹²¹ As a result of these concerns, some are skeptical of how close the law is to the general, widespread use of neurological evidence.¹²²

B. Evidentiary Burdens

This pessimistic view towards neuroscience in the courtroom is illuminated by a survey of the evidentiary standards regarding scientific evidence. As it pertains to the admissibility of scientific evidence in federal court, the admissibility of scientific expert evidence is based on the *Daubert* test, which requires the weighing of a number of factors, including (1) the testing of a scientific theory through the principles of the scientific method; (2) peer review and publication; (3) rate of error; and (4) acceptance of the method in its particular field.¹²³ This standard “is not particularly friendly to novel scientific evidence,” as “they are less likely to have been tested . . . the rate of error may not yet be known . . . and peer review or publication may not have been achieved.”¹²⁴

A minority of states have retained a less comprehensive standard than *Daubert*. This standard, referred to as the *Frye* test, requires only that the technology informing the scientific evidence at hand is “generally accepted” in the “particular field to which it belongs.”¹²⁵ The relevant scientific community as it pertains to neuroscientific technology will be crucial in determining admission under this standard, although there will likely be a healthy dose of scientific skepticism to cut against acceptance regardless of that definition.

¹²¹ See, e.g., *supra* note 1, at 625; Stephen J. Morse, *Neuroimaging Evidence in Law: A Plea for Modesty and Relevance*, in *NEUROIMAGING IN FORENSIC PSYCHIATRY: FROM THE CLINIC TO THE COURTROOM* 341, 342 (Joseph R. Simpson ed., 2012) (stating that the use of neuroimaging in criminal cases appears to be scarce (though precise estimates of its use are difficult because of the propensity for criminal cases to end in plea bargains) at least in part because of the expense of the technology).

¹²² See *id.*

¹²³ *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 597, 593 (1993).

¹²⁴ Eggen & Laury, *supra* note 13, at 281.

¹²⁵ *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923).

Even where scientific evidence is reliable, an expert's interpretation of scientific information must be relevant to the issues of a particular case in order for that expert's testimony to be admitted.¹²⁶ This creates an interesting "Catch-22" as it relates to the admission of neuroscientific evidence and the bifurcated rule. On the one hand, under the bifurcated rule, such evidence is irrelevant because the presence of mental illness is irrelevant. On the other hand, in order to make even a prospective argument that a defendant's mental illness *should* be considered in tort, neurological evidence would need to be contemplated.

Legal evidentiary standards have proven to be a difficult barrier to the admission of neuroscientific evidence in practice thus far.¹²⁷ Most neurological evidence, like all scientific evidence, is screened by a judge before it may be presented to a jury.¹²⁸ The judge is a "gatekeeper" for all scientific evidence and only after she determines the evidence admissible under the relevant standard may it be considered by the jury.¹²⁹ Judges may be "hesitant" to admit neuroscientific evidence until "neuroscientists reach some degree of cohesiveness on the subjects."¹³⁰ In *United States v. Semrau*, for example, "the magistrate judge discussed at length fMRI evidence," and then "proffered on the issue of veracity, in relation to the *Daubert* test, that '[although the expert] is qualified to offer an opinion . . . the testimony should be excluded, because, at least at this early stage in its development, fMRI based lie detection does not satisfy [its] requirements."¹³¹

¹²⁶ *General Electric Co. v. Joiner*, 522 U.S. 136, 146 (1997).

¹²⁷ See Eggen, *supra* note 19, at 642.

¹²⁸ See, e.g., Neal Feigenson, *Brain Imaging and Courtroom Evidence: On the Admissibility and Persuasiveness of fMRI*, in *LAW AND NEUROSCIENCE* 153, 153 (Owen D. Jones et al., eds. 2014) (noting that most fMRI evidence comes before a judge, not a jury).

¹²⁹ See *Daubert*, 509 U.S. at 597.

¹³⁰ Jane Campbell Moriarty, *Flickering Admissibility: Neuroimaging Evidence in the U.S. Courts*, in *LAW AND NEUROSCIENCE* 154, 154 (Owen D. Jones et al., eds. 2014).

¹³¹ Eggen, *supra* note 19, at 642 n.192 (quoting *U.S. v. Semrau*, No. 07-10074, 2010 WL 6845092 at *10 (W.D. Tenn. June 1, 2010)).

Some commentators also wonder whether judges will not admit such evidence due to concern that, “as with all new technologies[,] . . . neuroscience will dazzle the jurors who will inappropriately emphasize its value.”¹³² This could possibly be mitigated by “careful jury instructions indicating that information gleaned from fMRI and other studies is merely a single piece of evidence.”¹³³ At this time, however, it is unknown exactly how much more persuasive fMRIs and other imaging evidence would be relative to verbal and written testimony.¹³⁴

C. Philosophical/Psychiatric Issues

Stephen J. Morse argues that there is also a fundamental philosophical barrier preventing the meaningful use of neuroscience in a legal context.¹³⁵ Humans, he states, do not want to see themselves as “mechanical forces of nature,” rather, they want to see themselves as rational beings.¹³⁶ As such, humans will naturally seek to discredit and reject evidence that may portray them to the contrary.¹³⁷

There are a wide range of views to be found on this subject. Some argue that neuroscientific evidence threatens our fundamental concepts of “blame,” replacing it with a sort of biological determinism that, in essence, lets humans off the hook for their own actions.¹³⁸ But some emphasize that moral responsibility can be normatively distinguished from the science of neural coordination.¹³⁹ And Morse himself has conceded that he does not believe neuroscientific findings will actually alter human behavior.¹⁴⁰ If anything, the discourse surrounding this topic shows that

¹³² Feigenson, *supra* note 125, at 246–48 (2006).

¹³³ Eggen & Laury, *supra* note 13, at 296.

¹³⁴ Farah, *supra* note 84, at S28.

¹³⁵ Stephen J. Morse, *Determinism and the Death of Folk Psychology: Two Challenges to Responsibility from Neuroscience*, 9 MINN. J.L. SCI. & TECH. 1, 4 (2008).

¹³⁶ *Id.*

¹³⁷ *See id.*

¹³⁸ *See* Steven K. Erickson, *Blaming the Brain*, 11 MINN. J. L. SCI & TECH. 27, 28 (2010).

¹³⁹ *See generally* MICHAEL S. GAZZANIGA, *THE ETHICAL BRAIN* 101 (2005).

¹⁴⁰ Morse, *supra* note 132, at 19.

scientists must develop better theories connecting cognitive variables and fMRI information, and that potential expert witnesses must hone their ability to draw inferences and support their scientific conclusions.¹⁴¹

D. Societal Stigmas

Scholars have outlined reasonable arguments in favor of the preservation of the bifurcated rule. These arguments highlight the relative “stakes” of criminal versus civil law, debate the practicality of a unified rule, and most notably, argue that the law should reflect societal norms.¹⁴² But it is difficult to disaggregate how those societal norms, and thus, how the law treats people with mental illness, are effected by societal stigmas towards mental illness.¹⁴³

Mental health law in the United States is based on an assumption that “mental disorders may place a person at increased risk of physically harming himself or herself or others.”¹⁴⁴ And for much of its history, the language concerning mental illness employed in many cases and the Restatements contained severe, negative terminology, including the words “lunatic,” “insane,” and “mental defective.”¹⁴⁵ Some have even argued that the mere act of allowing mental health evidence in the courtroom serves to perpetuate these stigmas.¹⁴⁶

This presents something of a vicious cycle when it comes to transforming tort law: fixing the bifurcated rule may ease societal stigmas, but societal stigmas may need to be eased before the bifurcated rule can be eliminated. It could be argued that law has the capacity, and even the

¹⁴¹ Read Montague, *How is Neuroscience Likely to Impact Law in the Near Future?*, in A JUDGE’S GUIDE TO NEUROSCIENCE: A CONCISE INTRODUCTION 60, 60-61.

¹⁴² See Bernice A. Pescosolido et al., *The Public’s View of the Competence, Dangerousness, and Need for Legal Coercion of Persons with Mental Health Problems*, 89 AM. J. PUB. HEALTH 1339, 1339 (1999) (outlining the societal “assumptions” which underpin mental health law).

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ *Id.* See also *Sholty*, 13 N.E. at 240; *Lambotte*, 363 P.2d at 166; RESTATEMENT (SECOND) OF TORTS §283B cmt. b (1965).

¹⁴⁶ See Paul S. Applebaum, *Reference Guide on Mental Health Evidence*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 813, 819 (2011).

responsibility, to lead in this area; “classically, the ambition of legal regulation is to change behaviors,” often in conjunction with a sort of moral aspirationalism.¹⁴⁷ But others would posit that the law should reflect current societal attitudes, and that a person’s motivation to follow the law stems from the codification of those norms.¹⁴⁸ Regardless, transformation of the law as it pertains to the mentally ill and transformation of societal views towards mental illness must work hand in hand to be effective.

V. To Effectively Transform Negligence Liability for Individuals with Mental Conditions that Impair their Behavior, Radical Change is Required

With the state of neuroscience and its relationship to tort laid out in brief, this Section will first evaluate proposals which argue for the unification of physical and mental conditions in tort. Then, it will highlight the deficiencies of other, alternative proposals. Finally, it will propose a new solution to the bifurcated rule, that a tort defendant should be required to prove their “significant” mental condition by a preponderance of the evidence in order to be factored into their relevant standard of care.

A. The Starting Point: Unification of Physical and Mental Disabilities

“The bifurcated rule should be replaced with a single duty rule for adults with disabilities, whether physical or mental.”¹⁴⁹ Establishing a single rule would allow for one uniform standard for disabled adult defendants in negligence actions, and would also bring the law in line with standards concerning intentional torts, contributory negligence, and the child standards of care.¹⁵⁰ The universal applicability of a “significant and objectively verifiable” standard (that which is

¹⁴⁷ Kenworthy Bilz & Janice Nadler, *Law, Moral Attitudes, and Behavioral Change*, in THE OXFORD HANDBOOK OF BEHAVIORAL ECONOMICS AND THE LAW 241, 241 (Eyal Zamir & Doron Tiechman eds. 2014).

¹⁴⁸ See generally Amir N. Licht, *Societal Norms and the Law: Why Peoples Obey the Law*, 4 REV. OF L. AND ECON. 715 (2008) (laying out the argument that legal compliance stems from social norms).

¹⁴⁹ Eggen, *supra* note 19, at 643.

¹⁵⁰ See *id.*

currently applied to physical disabilities) to *all* disabilities would also serve to ease the administrative convenience concerns posited in the Third Restatement.¹⁵¹

But while “complete unification” would certainly be important symbolically as it pertains to the treatment of mental conditions in the law, it is neither significantly transformative nor commensurate with the current state of neuroscientific evidence. The “significant and objectively verifiable” standard does not properly balance the benefits and limitations of neuroscience-based evidence. It also leaves a sufficient likelihood that the current rationales for excluding mental conditions, such as that they are simply “too hard” to litigate and diagnose, will simply be applied to a standard that appears more inclusive, but is illusory in practice.¹⁵² In attempting to assuage fears about administrative feasibility, proponents of “complete unification” are simply trading those concerns for a new set of skeptical attitudes regarding neuroscientific evidence. Judges will likely use the rationales mentioned throughout this paper, including evidentiary relevancy, jury misuse, and a lack of objective causal evidence to ensure that the “significantly and objectively verifiable” standard is too high a bar for most defendants with mental conditions to clear.

It might be argued that when it comes to a change in the bifurcated rule, symbolism is really what matters. Professor Harry J.F. Korrell has stated that “a change would take the law another step toward humane accommodation of the mentally disabled. A rejection of the current rule would be a much needed, symbolic rejection that the courts are a place to turn for relief from the burdens of every misfortune.”¹⁵³ He further posits that this sort of change would indicate a general acceptance of neurodiversity, a “recognition that there are risks inherent in living in a rich

¹⁵¹ *Id.*

¹⁵² *See supra* Section IV.B for a discussion of these issues.

¹⁵³ Korrell, *supra* note 59, at 57.

and crowded society, which cannot properly be shifted simply because we prefer not to bear them.”¹⁵⁴

B. Other Proposed Changes to the Bifurcated Rule

i. Mental Conditions With “Demonstrably Organic” Causes

Other scholars propose that mental conditions with “demonstrably organic” causes should be considered for the purposes of duty.¹⁵⁵ Using a standard of “demonstrably organic” is meant to equalize mental conditions to physical ones and ensure that mental conditions are sufficiently “serious”. But this would have the effect of excluding “mental disabilities [which] may not be detectable as organic changes in the brain or other bodily organs.”¹⁵⁶ Changing the standard from “demonstrably organic cause” to “objectively verifiable” purports to be more inclusive,¹⁵⁷ but it is doubtful that such a technical legal change will really make a difference to the average jury, or even the average judge.

ii. Modified Bifurcated Rule

Some scholars propose “an exception [or defense] to the objective reasonableness standard, rendering it slightly subjective when applied to adult defendants with relative cognitive impairments in claims of primary negligence.”¹⁵⁸ This is an attractive option, as it attempts to balance flexibility with administrative feasibility, better aligns the rule with other tort considerations of mental condition, and comports with modern attitudes.¹⁵⁹ But the proposed subjective requirements of a modified bifurcated rule leave much to be desired. Generally, these proposed standards parallel the criminal insanity defense, requiring that the defendant “could not

¹⁵⁴ *Id.*

¹⁵⁵ Eggen & Laury, *supra* note 13, at 290.

¹⁵⁶ Eggen, *supra* note 19, at 645.

¹⁵⁷ *Id.*

¹⁵⁸ Criscoe & Lukasik, *supra* note 22, at 21.

¹⁵⁹ *See id.*

appreciate the consequences of or the risks posed by his conduct” or “lacked the capacity to act differently or refrain [from his conduct].”¹⁶⁰

First, it does not follow logically that standards regarding mental conditions be equivalent in criminal and civil contexts, given that the burdens of proof are significantly lower in civil cases, and the stakes at issue are also radically different.¹⁶¹ Additionally, these standards seem to place a heightened burden on those with mental conditions as opposed to physical conditions. Rather than simply incorporate a mental condition into a reasonable person standard, they require a defendant to prove that they have little to control over their actions. If a blind man must act as a reasonable blind man would to avoid liability, as opposed to proving that he was completely incapacitated by his blindness, one with a mental condition should have to act reasonably relative to *that* condition, not establish that they are entirely incapacitated by it.

iii. Forced Imposition of Strict Liability

It has also been posited that “courts should make decisions about liability in these cases only after consciously confronting the liability for what it is, faultless, and after arriving at the further conclusion, if it is possible, that strict liability is desirable and appropriate under the circumstances.”¹⁶² This seems to be, mostly, an affirmation of the status quo. This solution operates under the belief that, when forced to actively impose strict liability rather than follow black letter bifurcation law, judges and juries will be less likely to do so.¹⁶³ But this fails to consider that the *Hays* rationales for the bifurcated rule have been followed blindly over time despite a relatively constant academic challenge, and that traditionally considered “administratively feasible” option

¹⁶⁰ See, e.g., Korell, *supra* note 55, at 53; Kristin Harlow, *Applying the Reasonable Person Standard to Psychosis: How Tort Law Unfairly Burdens Adults with Mental Illness*, 68 OHIO ST. L.J. 1733, 1758 (2008).

¹⁶¹ In criminal cases, the punishment is jail time or capital punishment, while in civil cases, the consequence is usually monetary. See Pescosolido, *supra* note 129, at 1339.

¹⁶² Criscoe & Lukasik, *supra* note 22, at 41–42.

¹⁶³ See *id.*

will often be chosen over the one that requires a more nuanced determination of liability, even if that feasibility is mostly imagined.¹⁶⁴

iv. Shifting Some Burden to Plaintiff

One final proposed solution to the bifurcated rule is for courts to impute a general knowledge of cognitive diversity (meaning, the knowledge that mentally ill people exist in society) on that plaintiff. This would effectively require a plaintiff to “anticipate or safeguard against the harm[s]” that cognitive diversity may pose.¹⁶⁵ This builds on an earlier proposed modification to the bifurcated rule from Daniel Seidelson, who recommended that, similar to contract law, mental capacity should be considered where plaintiff had “actual or constructive” knowledge of defendant’s mental condition.¹⁶⁶

It is argued that this imputation of knowledge would better bring a tort plaintiff’s access to remedies in line with current societal attitudes regarding mental illness.¹⁶⁷ But it seems to be an end run around simply altering “reasonableness,” as well as an unnecessary logical stretch. Mental conditions *are* indeed “invisible” to the public in many places. Why burden the plaintiff with knowledge she may not have when it can instead be acknowledged that mental illnesses exist, have demonstrably organic causes, and may effect how a person behaves?

C. A Sufficiently Transformative and Effective Solution

As previously outlined, the unification between physical and mental conditions for tort defendants is important for symbolic reasons, but the state of neuroscientific evidence is such that standards of proof cannot be simply subjective.¹⁶⁸ As such, a defendant seeking to show a mental

¹⁶⁴ See *supra* Section II.B.

¹⁶⁵ Criscoe & Lukasik, *supra* note 22, at 61.

¹⁶⁶ David E. Seidelson, *Reasonable Expectations and Subjective Standards in Negligence Law: The Minor, The Mentally Impaired, and the Mentally Incompetent*, 50 GEO. WASH. L. REV. 17, 29 (1981). This proposal was premised on the notion that negligence should accommodate the “reasonable expectations” of both parties. *Id.*

¹⁶⁷ Criscoe & Lukasik, *supra* note 22, at 61.

¹⁶⁸ See *supra* Section V.A.

condition in tort should be required to prove by *a preponderance of the evidence* that they suffer from a “significant” condition. Once this standard is met, the condition will be treated like a physical condition for the purposes of determining her standard of care.

It should be noted that a preponderance of the evidence standard as to “proving” mental illness is ostensibly lower than what is required to prove physical illness. This is by design; the fact of the matter is that, while organic causes for mental conditions are more objectively provable than they were previously, the state of the science is such that a standard such as “objectively verifiable” is almost impossible to clear. So, if the bifurcated rule is to be transformed in a way that allows for the consideration of new science, while also maintaining a healthy skepticism in support of the efficiency and fairness rationales it has elucidated in regard to mental illness, application of the preponderance of the evidence to mental health conditions is the most logical choice.

And this proposal still maintains two screens to prevent the preponderance of the evidence standard for mental illness from becoming too defendant-friendly. First, like all other scientific evidence, including evidence that pertains to physical conditions or impairments, neurological evidence must meet the relevant standard for admissibility, *Frye* or *Daubert*. This means that a judge is required to consider the benefits, criticisms, and scientific acceptance of specific neurological evidence before it can be presented to a jury.¹⁶⁹ Second, the mental illness must still be objectively “significant” by a preponderance of the evidence. This prong of the analysis acknowledges that the diagnosis of mental illness is not, at this time, based wholly on organic

¹⁶⁹ In fact, a critic of this proposal might argue that the evidentiary standard, and not ultimate burden of proof, is the real issue. This critic might call for a presumption towards the admission of evidence used to establish mental illness, much like the presumption towards admission that is used in criminal sentencing cases. Although it would be beneficial to allow for the weighing of all relevant evidence, this might result in the process becoming muddled, completely foiling the administrative feasibility concerns underpinning the bifurcated rule.

factors, and balances any potential biases resulting from stigma with an interest in differentiating legitimate mental illness from simple abnormalities in personality.¹⁷⁰

VI. Conclusion

The intersection of neuroscience and the law is at an all time level of import. But it is important to keep in mind that in the near future, the technologies and methods outlined in this paper will only improve, and new technologies will emerge. Over time, some of the concerns discussed in this paper may be resolved, while other new apprehensions emerge. What is for sure, however, is that as science, technology, and law continue to interact, different areas of the law, and the traditional legal conventions which underpin them, will be implicated. As the legal community faces these changes, it is important that its institutions react swiftly but thoughtfully, and with a proper dose of skepticism—not only towards new technologies, but also towards the possibly outdated notions which these technologies may threaten. And as neuroscience continues to infiltrate new areas of the law (tort included), care must be taken to properly balance the state of the relevant technology with the societal, ethical, and administrative goals of the law.

¹⁷⁰ As previously mentioned, the most current Restatement of Torts still sees this as a rationale in favor of the bifurcated rule. See *RESTATEMENT (THIRD) OF TORTS*, *supra* note 44.