

## 18.

### Science and the Eighth Amendment

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As time hurtles forward, new science constantly emerges, and many scientific fields can shed light on whether a punishment is unconstitutionally cruel and unusual, or even on whether bail or fines are unconstitutionally excessive under the Eighth Amendment. In fact, in recent years, science has played an increasingly important role in the Court’s Eighth Amendment jurisprudence. From the development of an offender’s brain, to the composition of lethal injection drugs, even to measurements of pain, knowledge of various scientific fields is becoming central to understanding whether a punishment is unconstitutionally cruel and unusual. There are a number of limits to how the Court can weave science into its decisions, though. For example, relevant data are difficult to come by, as ethical limitations prevent a wide swath of focused research that could be useful in this arena. Further, the Justices’ understandings of the complicated science that can help inform their Eighth Amendment decisions are limited. This chapter examines the relevance and limitations of science—both physical and social—in Eighth Amendment analyses.

#### **Eighth Amendment Doctrine**

The Eighth Amendment’s meaning and applications continually evolve. As the plurality in *Trop v. Dulles*<sup>1</sup> explained, “the words of the Amendment are not precise, and . . . their scope is not

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<sup>1</sup> 356 U.S. 86 (1958) (plurality opinion).

static.”<sup>2</sup> Instead, “[t]he Amendment must draw its meaning from the evolving standards of decency that mark the progress of a maturing society.”<sup>3</sup> To measure the existing standards of decency at any particular point in time, courts have traditionally examined both objective and subjective indicia.

The primary objective indicium of decency is jurisdictions’ legislation. In other words, how many jurisdictions have adopted the practice at issue, and how many have rejected it? Also relevant is how often juries and judges have actually imposed the punishment in practice. Occasionally, the Court has suggested that examining opinion polls, the opinions of professional organizations, and foreign law could also play into an objective assessment of a punishment under the Eighth Amendment.<sup>4</sup>

As for a subjective assessment of the current standards of decency, the Court has taken it upon itself to bring its own independent judgment to bear. In examining this question, the Court has primarily looked at whether the punishment serves retributive and deterrent purposes. For example, where offenders suffering from intellectual disabilities are facing capital punishment, the Court has found that they are less culpable and less deterrable than other individuals without intellectual disabilities, rendering them ineligible for the ultimate punishment.<sup>5</sup> In more recent cases, though, the Court has examined other considerations, such as whether the punishment serves the goal of rehabilitation. In *Graham v. Florida*,<sup>6</sup> for example, the Court found that it is unconstitutional to impose the punishment of life without the possibility of parole (LWOP) on

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<sup>2</sup> *Id.* at 100–01.

<sup>3</sup> *Id.* at 101.

<sup>4</sup> See *Atkins v. Virginia*, 536 U.S. 304, 316 n.21 (2002).

<sup>5</sup> See generally *id.*

<sup>6</sup> 560 U.S. 48 (2010).

juvenile offenders who committed nonhomicide offenses in large part because “the penalty forswears altogether the rehabilitative ideal.”<sup>7</sup>

Over time, the Court’s interpretation of the Eighth Amendment has changed, just as the plurality dictated in *Trop*. Jurisdictions’ laws change with citizens’ and lawmakers’ views of punishment.<sup>8</sup> Perhaps the citizenry—whether influenced by religion, the media, politicians, or something else—have determined that a punishment is just too cruel to be imposed any longer. Or perhaps a jurisdiction has moved away from a particular punishment simply because it has proved to be too expensive—just as New Jersey abolished capital punishment in large part because of the exorbitant costs associated with it.<sup>9</sup>

At the same time, the frequency with which sentencers impose a particular punishment can vary over time. Maybe the nature of offenses has shifted. Perhaps the values and identities of judges and juries have changed. Regardless, as the laws and sentences change, this shapes the meaning of the Eighth Amendment prohibition on cruel and unusual punishments. In addition to laws and sentences changing, the ways in which the Court applies its independent judgment changes as new Justices fill Supreme Court seats and even as long-term Justices’ ideals change with greater experience. These fluctuations, too, shape the meaning of the Eighth Amendment.

Another important change agent is science. As more data about how jurisdictions implement punishments and how punishments affect offenders (and perhaps even other

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<sup>7</sup> *Id.* at 74.

<sup>8</sup> In fact, many citizens’ views on crime and punishment are cyclical in nature—at least with respect to certain types of offenses—rather than necessarily evolving toward more lenient treatment of the criminal behavior. See Meghan J. Ryan, *Taking Another Look at Second-Look Sentencing*, 81 BROOK. L. REV. 149, 163–65 (2015).

<sup>9</sup> See N.J. DEATH PENALTY STUDY COMM’N, N.J. DEATH PENALTY STUDY COMM’N REP. (Jan. 2007), [https://www.njleg.state.nj.us/committees/dpsc\\_final.pdf](https://www.njleg.state.nj.us/committees/dpsc_final.pdf); Richard Williams, *The Expense of the Death Penalty Has Lawmakers Reconsidering an Old Debate*, NAT’L CONF. OF STATE LEGS. (July/Aug. 2011), <http://www.ncsl.org/research/civil-and-criminal-justice/the-cost-of-punishment.aspx>.

individuals)<sup>10</sup> become available, citizens', juries', and judges' opinions about punishment may change. If, for example, new neuroscientific evidence were to make clear that a criminal action were the result of a physical abnormality in one's brain rather than the product of an offender's free will, many individuals might find it unjust—even cruel and unusual—to punish that individual with as harsh of a sentence as would ordinarily apply, or perhaps even to punish that individual at all. Or, if it becomes clear based on new science that, for example, current methods of execution create a significant amount of excruciating pain that is avoidable by employing an alternative method, then current Eighth Amendment doctrine would suggest that the punishment is unconstitutional.<sup>11</sup>

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### **Science, the Offender, and Punishment**

New science is likely to have an effect on punishments under the Eighth Amendment in at least two categories. First, this new information could provide insight on what types of offenders are eligible for particular punishments. Second, the information could spur innovations in punishment and also provide greater understanding about how punishments affect those being punished, which could bear on the acceptability of the punishments.

#### *Offender Characteristics*

The Supreme Court has long worried about how the state of one's mind relates to punishment. In *Ford v. Wainwright*,<sup>12</sup> the Court chronicled the history of the prohibition on

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<sup>10</sup> See generally Meghan J. Ryan, *Proximate Retribution*, 48 HOUS. L. REV. 1049 (2012) (arguing that harms proximately caused by criminal wrongdoing should be considered in retribution-based sentencing).

<sup>11</sup> See *Glossip v. Gross*, 135 S. Ct. 2726, 2738 (2015) (“Our first ground for affirmance is based on petitioners’ failure to satisfy their burden of establishing that any risk of harm was substantial when compared to a known and available alternative method of execution.”).

<sup>12</sup> 477 U.S. 399 (1986).

executing “insane” persons, finding that “[t]he bar against executing a prisoner who has lost his sanity bears impressive historical credentials” and explaining that “the practice consistently has been branded ‘savage and inhuman.’”<sup>13</sup> Perhaps not surprisingly, then, the *Ford* Court found that the Eighth Amendment prohibits the practice. Although the historical reasons for the ban are not entirely clear, the Eighth Amendment prohibition is grounded in the idea that an offender should understand what is happening to him and why.<sup>14</sup> And “insanity” could very well prevent an offender from understanding the details of his execution and also why he is being put to death.

Over the years, the Court has expanded the classes of persons who are not eligible for certain punishments. For example, in *Atkins v. Virginia*<sup>15</sup> and *Roper v. Simmons*,<sup>16</sup> the Court held that intellectually disabled persons and juvenile offenders cannot constitutionally be executed. And in *Graham*, the Court held that sentencers cannot constitutionally impose LWOP on juvenile non-homicide offenders.<sup>17</sup>

In supporting these conclusions, the Court has relied on society’s views of punishment through the measuring stick of the objective indicia of the standards of decency. It is not entirely clear why societal views of these punishments as related to these particular offenders changed, and, in fact, the Court has been accused of engaging in some creative accounting in concluding that a societal consensus had formed against these punishments. For example, in *Atkins*, Justice Scalia criticized the Court for “miraculously extract[ing] a ‘national consensus’ forbidding execution of the mentally retarded, from the fact that eighteen States—less than *half* (47%) of the

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<sup>13</sup> *Id.* at 406.

<sup>14</sup> See *Panetti v. Quarterman*, 551 U.S. 930, 957 (2007) (explaining that *Ford* prohibits executing offenders who do not understand the punishment imposed on them and why it was imposed); *Ford*, 477 U.S. at 417 (“It is no less abhorrent today than it has been for centuries to exact in penance the life of one whose mental illness prevents him from comprehending the reasons for the penalty or its implications.”).

<sup>15</sup> 536 U.S. 304 (2002) (prohibiting the execution of intellectually disabled persons).

<sup>16</sup> 543 U.S. 551 (2005) (prohibiting the execution of juveniles).

<sup>17</sup> See *Graham v. Florida*, 560 U.S. 48 (2010).

thirty-eight States that permit capital punishment (for whom the issue exists)—have very recently enacted legislation barring execution of the mentally retarded.”<sup>18</sup> He characterized this as “embarrassingly feeble evidence of ‘consensus.’”<sup>19</sup> Despite any shortcomings in the Court’s assessment of the objective indicia of decency in these cases, a majority of the Court found the relevant changes in legislation, sentencing, and the like sufficiently persuasive. The majority thus moved on to the subjective assessment of decency, which the dissenters suggested was actually driving the Court’s conclusions in these cases anyway.

Indeed, the *Court’s* views on the punishments in cases like *Atkins*, *Roper*, and *Graham* also had evolved such that the Court, in its own independent judgment, found the punishments unconstitutional. Some of this may be the result of shifting membership on the Court, but the Court (perhaps not surprisingly neglecting to acknowledge that Supreme Court decisions often follow popular opinion)<sup>20</sup> has explained the changes by outlining how the various punishments no longer serve the relevant punishment goals. For example, in *Roper* and *Atkins*, the Court described how executing juveniles and intellectually disabled persons does not serve the punishment goals supporting the death penalty. It does not serve deterrence goals because these persons are generally less deterrable than the average person, and it does not serve retributive goals because these persons are generally less culpable than the average offender. In *Graham*, the Court explained that imposing the punishment of LWOP on juvenile non-homicide offenders similarly does not serve retribution or deterrence goals. Further, it is incompatible with incapacitation, and, probably most

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<sup>18</sup> *Atkins*, 536 U.S. at 342 (Scalia, J., dissenting) (internal citations omitted); *see also, e.g., Roper*, 543 U.S. at 608 (Scalia, J., dissenting) (arguing that the Court “finds, on the flimsiest of grounds, that a national consensus . . . solidly exists” and stating that “[w]ords have no meaning if the views of less than 50% of death penalty States can constitute a national consensus”).

<sup>19</sup> *See Atkins*, 536 U.S. at 344 (Scalia, J., dissenting).

<sup>20</sup> *See generally* BARRY FRIEDMAN, *THE WILL OF THE PEOPLE: HOW PUBLIC OPINION HAS INFLUENCED THE SUPREME COURT AND SHAPED THE MEANING OF THE CONSTITUTION* (2009); Meghan J. Ryan, *Justice Scalia’s Bottom-Up Approach to Shaping the Law*, 25 WM. & MARY BILL RTS. J. 297, 317 (2016) (“There is evidence that the Court, at least to some extent, follows public opinion.”).

importantly, undercuts rehabilitation because “[t]he penalty forswears altogether the rehabilitative ideal.”<sup>21</sup> Certainly, new science did not establish that the purposes of punishment fail to support these particular punishments for these particular groups of offenders, but, by the time these cases were decided, there was evidence that these goals were weaker under these conditions. For example, deterrence theory depends on rational decision-making by would-be offenders, but, if these individuals’ decision-making is impaired—as the science suggests is often true for juveniles and intellectually disabled persons—then the deterrence rationale for punishment would be diminished in these circumstances. Accordingly, changing understandings about punishments’ effectiveness and offenders’ competency, culpability, and deterrability can very well shift the Court’s independent judgment about the constitutionality of a punishment.

New science can contribute to our understandings about when offenders are unable to perceive what is happening to them and why, the extent to which particular offenders are less culpable than others, how deterrable certain offenders are, and the effectiveness of rehabilitation efforts. In some of its most recent cases, the Court has turned to the realms of psychology and neuroscience to further support the notion that some persons should not be subjected to particular punishments.<sup>22</sup> For example, the Court’s decision in *Roper* points to the “scientific and social studies” that illustrate juveniles’ “lack of maturity” and “underdeveloped sense of responsibility.”<sup>23</sup> It further refers to juveniles’ particular “vulnerab[ility] or susceptib[ility] to negative influences and outside pressures,”<sup>24</sup> as well as the transitory, or unfixed nature, of their characters or personalities. These special juvenile characteristics established children as a unique

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<sup>21</sup> *Graham*, 560 U.S. at 74.

<sup>22</sup> Cf. Laurence Steinberg, *The Influence of Neuroscience on US Supreme Court Decisions About Adolescents’ Criminal Culpability*, 14 NATURE NEUROSCI. 513, 513 (2013) (“References to neuroscience in the Supreme Court’s thinking about adolescent culpability have become more frequent, just as neuroscience has become more influential in legal policy and practice more generally.”).

<sup>23</sup> *Roper*, 543 U.S. 551, 569 (2005).

<sup>24</sup> *Id.* at 569.

class requiring greater scrutiny and rendered juveniles ineligible for capital punishment. In *Graham* and *Miller v. Alabama*,<sup>25</sup> the Court doubled down on its previous examination of juvenile brain development. In *Graham*, the Court explained that “developments in psychology and brain science continue to show fundamental differences between juvenile and adult minds,” such as the continued maturation of parts of “the brain involved in behavior control.”<sup>26</sup> And in *Miller*, the Court recited the facts underlying *Roper* and *Graham*, explaining that these “decisions rested not only on common sense—on what ‘any parent knows’—but on science and social science as well.”<sup>27</sup> Moreover, the *Miller* Court noted that “[t]he evidence . . . indicate[d] that the science and social science supporting *Roper*’s and *Graham*’s conclusions ha[d] become even stronger.”<sup>28</sup> This led the Court to conclude that, even though mandatory sentences other than the death penalty are generally constitutional, mandatorily imposed LWOP sentences are impermissible for juveniles.

Neuroscience, psychology, and other disciplines contributing to our understandings of competency, culpability, and deterrability often provide us with the possibility of individualized assessments, which can pose a challenge for existing Eighth Amendment doctrine. Although the Court has held that, at least to some extent, the Eighth Amendment requires individualized sentencing,<sup>29</sup> the Court has been hesitant to strike down mandatory sentencing outside the capital context and has generally found Eighth Amendment relief for petitioners in only a categorical manner. For example, the Court has exempted a number of classes of individuals from capital punishment, and it has exempted juveniles from LWOP sentences, but the Court has generally not found long sentences or the death penalty to violate the Eighth Amendment as applied to a

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<sup>25</sup> 567 U.S. 460 (2012).

<sup>26</sup> *Graham*, 560 U.S. at 68.

<sup>27</sup> *Miller*, 567 U.S. at 471.

<sup>28</sup> *Id.* at 472 n.5.

<sup>29</sup> See generally *Woodson v. North Carolina*, 428 U.S. 280 (1976) (plurality opinion); Ch. 4.

particular individual who was not part of a special class.<sup>30</sup> Instead, as in *Atkins*, *Roper*, *Graham*, and *Miller*, the Court has exempted groups of offenders from punishments because of their class characteristics. This categorical approach to the Eighth Amendment could very well clash with the Court's embrace of individualized scientific evidence about competency, culpability, and deterrability. The tension between the categorical approach and the use of individualized scientific evidence is apparent in *Roper*, where, although the Court exempted juveniles from capital punishment as a categorical matter, it acknowledged that this approach was subject to objections: "The qualities that distinguish juveniles from adults do not disappear when an individual turns eighteen. By the same token, some under eighteen have already attained a level of maturity some adults will never reach."<sup>31</sup> Nevertheless, the Court explained, "a line must be drawn."<sup>32</sup> If the Court continues ushering neuroscience, psychology, and other disciplines capable of individualized assessments of competency, culpability, and deterrability into its decision-making and opinions, it will need to more squarely confront the tension between the possibilities of improved accuracy by way of individualized determinations and the Court's hesitancy to look at these issues on a case-by-case basis.

As a discipline, modern neuroscience is still in its infancy, and researchers have much to learn about brain development, abnormalities, and injuries. As we learn more about the human brain—how decisions are made and how brain capabilities and functions differ—this information could well be relevant to the competency, culpability, and deterrability concerns that the Court has expressed in its Eighth Amendment opinions. Some commentators are troubled by the possibility

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<sup>30</sup> The Court has, however, exempted certain offenses from death penalty eligibility. *See, e.g.*, *Kennedy v. Louisiana*, 554 U.S. 407 (2008) (striking down capital punishment for the crime of child rape); *Coker v. Georgia*, 433 U.S. 584 (1977) (plurality opinion) (striking down capital punishment for the crime of adult rape).

<sup>31</sup> *Roper v. Simmons*, 543 U.S. 551, 574 (2005).

<sup>32</sup> *Id.*

that, as we continue to learn more about our brains, we could very well discover that criminal actions generally correspond with physical changes or differences in the brain. Indeed, some of the science suggests that it is the physical brain, rather than free will or the mind, that causes our actions and thus criminal behavior. For example, in 1983, Benjamin Libet et al. reported on their study showing that subjects' brain activity associated with movement occurred several hundred milliseconds before they reported intending those movements.<sup>33</sup> This finding was interpreted to prove that there is no free will—that the brain, rather than the mind, caused the movement.<sup>34</sup> The study and its conclusions have since been roundly criticized, but this question about the existence and extent of free will remains. More recently, neuroscientists have been studying prisoners' brains using functional magnetic resonance imaging (fMRI) and have found aberrant brain activity in “criminal psychopaths,” suggesting that perhaps it was the offenders' brains, not their minds, that caused them to commit criminal acts.<sup>35</sup> Some commentators are concerned that this and similar findings could completely undermine the fundamental moral basis of criminal law that each of us has free will and should be held responsible for our actions.<sup>36</sup> Other commentators are less concerned, concluding that the causation issue to which neuroscience is relevant—whether the

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<sup>33</sup> See Benjamin Libet et al., *Time of Conscious Intention to Act in Relation to Onset of Cerebral Activity (Readiness-Potential): The Unconscious Initiation of a Freely Voluntary Act*, 106 BRAIN 623 (1983); see also Stephen J. Morse, *New Neuroscience, Old Problems*, in NEUROSCIENCE AND THE LAW: BRAIN, MIND, AND THE SCALES OF JUSTICE 169 (Brent Garland ed., 2004) (stating that “Libet’s exceptionally creative and careful studies demonstrate that measurable electrical brain activity associated with intentional actions occurs about 550 milliseconds before the subject actually acts, and for about 350–400 milliseconds *before* the subject is consciously aware of the intention to act”).

<sup>34</sup> See Libet et al., *supra* note 33, at 640–41 (suggesting that the evidence “would appear to introduce certain constraints on the potential of the individual for exerting conscious initiation and control over his voluntary acts”).

<sup>35</sup> See Kent A. Kiehl, *A Cognitive Neuroscience Perspective on Psychopathy: Evidence for Paralimbic System Dysfunction*, 142 PSYCHIATRY RES. 107 (2006); see also John Seabrook, *Suffering Souls: The Search for the Roots of Psychopathy*, THE NEW YORKER, Nov. 1, 2008.

<sup>36</sup> See, e.g., Joshua Greene & Jonathan Cohen, *For the Law, Neuroscience Changes Nothing and Everything*, 359 PHIL. TRANS. R. SOC. LOND. B 1775 (2004) (“Cognitive neuroscience, by identifying the specific mechanisms responsible for behaviour, will vividly illustrate what until now could only be appreciated through esoteric theorizing: that there is something fishy about our ordinary conceptions of human action and responsibility, and that, as a result, the legal principles we have devised to reflect these conceptions may be flawed.”).

physical brain or rather free will caused the criminal behavior—is distinct from the responsibility issue on which the law is based.<sup>37</sup> These are different views stemming from science’s suggestion that the culpability basis of criminal law may be eroding. But the science is not so clear. Often, neuroscientists’ findings leave even a simpler causation question unanswered. We do not know whether the offenders’ brains caused them to commit their crimes or, rather, whether the offenders’ criminal activity or their time in prison caused the physical abnormalities in their brains. Without knowing the answer to this, and other related questions, the provocative science cannot shed too bright of a light on the legal questions, let alone answer them. In fact, science alone cannot answer these legal questions. Science is amoral. It can only provide us with additional factual information that one can use in deciding these very difficult legal questions.

### *The Characteristics of Punishment*

Beyond assessing which groups of offenders are ineligible for particular punishments, the Court has also been concerned about the constitutionality of certain types and methods of punishment. For example, the *Trop* Court struck down the punishment of denationalization because, “more primitive than torture, . . . [the punishment] destroys for the individual the political existence that was centuries in the development”—it strips the “expatriate [of his] right to have rights.”<sup>38</sup> However, despite the fact that the punishment of death is generally thought to be more severe than denationalization—a reality acknowledged by the *Trop* majority<sup>39</sup>—the Court has

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<sup>37</sup> See, e.g., Morse, *supra* note 33, at 181 (“[U]nless neuroscience demonstrates that no one is capable of minimal rationality—a wildly implausible scenario—fundamental criteria for [legal] responsibility will be intact.”).

<sup>38</sup> *Trop v. Dulles*, 356 U.S. 86, 101–02 (1958) (plurality opinion).

<sup>39</sup> See *id.* at 99 (“Since wartime desertion is punishable by death, there can be no argument that the penalty of denationalization is *excessive* in relation to the gravity of the crime.” (emphasis added)).

repeatedly refused to strike down capital punishment as unconstitutional.<sup>40</sup> This is a result of the punishment's entrenchment in both American history and the U.S. Constitution itself.<sup>41</sup>

The Court has commented on particular methods of execution, however. It has explained that methods of execution have generally evolved over time as states have applied new science and technology to create more humane punishments. At the time of the country's founding, hanging was the ordinary mode of carrying out executions. This method was thought to be "more humane than some of the punishments of the Old World," although "it was no guarantee of a quick and painless death."<sup>42</sup> Firing squads were also used during this time.<sup>43</sup> "Through much of the 19th century, States experimented with technological innovations aimed at making [executions—particularly hangings—] less painful."<sup>44</sup> Toward the end of the century, in seeking out "the most humane and practical method known to modern science," the State of New York settled on electrocution.<sup>45</sup> Several other states followed, also adopting electrocution. About half a century later, also perhaps in pursuit of "the most humane manner known to modern science," Nevada adopted a new method of execution: lethal gas.<sup>46</sup> Again, other states followed suit. Well into the

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<sup>40</sup> See, e.g., *Bucklew v. Precythe*, 139 S. Ct. 1112, 1122 (2019) ("The Constitution allows capital punishment."); *Glossip v. Gross*, 135 S. Ct. 2726, 2732–33 (2015) ("[B]ecause it is settled that capital punishment is constitutional, it necessarily follows that there must be a constitutional means of carrying it out." (internal quotations and alterations omitted)); *Baze v. Rees*, 553 U.S. 35, 47 (2008) (plurality opinion) ("We begin with the principle, settled by *Gregg*, that capital punishment is constitutional."); *Gregg v. Georgia*, 428 U.S. 153, 169 (1976) ("We now hold that the punishment of death does not invariably violate the Constitution.").

<sup>41</sup> See U.S. CONST. amend. V (referencing "capital . . . crime[s]"); see also *Glossip*, 135 S. Ct. at 2731 ("The death penalty was an accepted punishment at the time of the adoption of the Constitution and the Bill of Rights."); *Gregg*, 428 U.S. at 168–87.

<sup>42</sup> *Bucklew*, 139 S. Ct. at 1124.

<sup>43</sup> See Deborah W. Denno, *The Firing Squad As "A Known and Available Alternative Method of Execution"* *Post-Glossip*, 49 U. MICH. J.L. REFORM 749, 778 (2016) ("Along with hanging, the firing squad is this country's oldest method of execution.").

<sup>44</sup> *Bucklew*, 139 S. Ct. at 1124.

<sup>45</sup> *In re Kemmler*, 136 U.S. 436, 444 (1890). As Professor Deborah Denno has pointed out, though, "[c]ompelling evidence suggests that the [decision] was influenced heavily by a financial competition between Thomas Edison and George Westinghouse concerning whose current would dominate the electrical industry: Edison's DC current or Westinghouse's AC current." Deborah W. Denno, *When Legislatures Delegate Death: The Troubling Paradox Behind State Uses of Electrocution and Lethal Injection and What It Says About Us.*, 63 OHIO ST. L.J. 63, 72 (2002).

<sup>46</sup> *State v. Jon*, 211 P. 676, 682 (Nev. 1923).

twentieth century, states carried out their executions using a variety of these techniques, including hanging, firing squad, electrocution, and lethal gas. By the 1970s, though, there were concerns about the barbarity of various execution methods like electrocution and gas. Further, maintaining electric chairs and gas chambers had become expensive. Spurred by these considerations, an Oklahoma state senator asked Dr. Jay Chapman, the state medical examiner, and Dr. Stanley Deutsch, the University of Oklahoma College of Medicine's Anesthesiology Department chairman, to investigate an intravenous method of execution.<sup>47</sup> Dr. Chapman and Dr. Deutsch then advised on the particular drugs to use, with Dr. Deutsch concluding that "[w]ithout question this is . . . extremely humane in comparison to either electrocution or execution by the inhalation of poisonous gases."<sup>48</sup> Based on this proposal, Oklahoma, and then other states, soon adopted lethal injection as their primary method of execution, and this remains the primary mode of execution in the United States today.

Thus far, the Court has not found any method of execution to violate the Eighth Amendment. The Court has stated that it has specifically upheld death by firing squad and electrocution, although close readings of the relevant cases create questions about the precedential value of these holdings.<sup>49</sup>

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<sup>47</sup> See Denno, *supra* note 45, at 95; Josh Sanburn, *Creator of Lethal Injection Method: "I Don't See Anything That Is More Humane,"* TIME, May 15, 2014, <https://time.com/101143/lethal-injection-creator-jay-chapman-botched-executions/>.

<sup>48</sup> Denno, *supra* note 45, at 95 n.207 (quoting the February 29, 1977, letter from Senator Bill Dawson to Dr. Deutsch); Sanburn, *supra* note 47.

<sup>49</sup> See *Bucklew*, 139 S. Ct. at 1123–24 (referencing the *In re Kemmler* and *Wilkerson v. Utah* decisions); Denno, *supra* note 43, at 761–62 (suggesting that the Court did not uphold the methods of electrocution and firing squad under the Eighth Amendment in *In re Kemmler* and *Wilkerson v. Utah*).

In recent years, the Court has focused on the cruelty involved in lethal injection.<sup>50</sup> Over the past decade or so, the Court has decided three cases on the topic. In *Baze v. Rees*,<sup>51</sup> the Court upheld the then-popular three-drug protocol—consisting of injecting the offender with sodium thiopental, then pancuronium bromide, and finally potassium chloride—for carrying out executions. In *Glossip v. Gross*,<sup>52</sup> the Court denied a preliminary injunction request to stop an execution using midazolam, rather than sodium thiopental, as the first drug in the three-drug protocol. And in *Bucklew v. Precythe*,<sup>53</sup> the Court upheld a single-drug lethal injection protocol using only the sedative pentobarbital.<sup>54</sup> In each of these cases, the Court has made clear that, at least today, the death penalty is generally a constitutional punishment. But there could be instances where the punishment is carried out in such a way that renders it unconstitutional. In particular, the Court has been focused on the pain, or the risk of pain, involved in these executions.

The *Baze* plurality explained that, for a method of lethal injection to violate the Eighth Amendment, “there must be a substantial risk of serious harm” that is “objectively intolerable.”<sup>55</sup> A petitioner could potentially establish this by suggesting an alternative method of execution—one that is “feasible, readily implemented, and . . . significantly reduce[s] [the] substantial risk of severe pain.”<sup>56</sup> Piggybacking on *Baze*, the *Glossip* Court explained that a petitioner may prevail on his claim that a method of execution is unconstitutional only if he can “establish[] that the

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<sup>50</sup> The Court and commentators often refer to the various “methods” of carrying out lethal injection. Because lethal injection is a “method” of execution, though, the various ways of carrying it out are perhaps better referred to as “techniques.” See William W. Berry III & Meghan J. Ryan, *Cruel Techniques, Unusual Secrets*, 78 OHIO ST. L.J. 403, 411 (2017).

<sup>51</sup> 553 U.S. 35 (2008) (plurality opinion).

<sup>52</sup> 135 S. Ct. 2726 (2015).

<sup>53</sup> 139 S. Ct. 1112 (2019).

<sup>54</sup> *Bucklew* was actually an as-applied challenge to the execution protocol in question. See generally *id.* (explaining that *Bucklew* “accept[ed] . . . that the State’s lethal injection protocol [was] constitutional in most applications” but argued that, “because of his unusual medical condition, . . . the protocol [was] unconstitutional as applied to him”).

<sup>55</sup> *Baze*, 553 U.S. at 50 (internal quotations omitted).

<sup>56</sup> *Id.* at 52 (opinion of Roberts, C.J.).

State’s lethal injection protocol creates a demonstrated risk of severe pain” and “that the risk is substantial when compared to the known and available alternatives.”<sup>57</sup> The *Bucklew* Court pushed this even further, emphasizing that it is the petitioner’s burden in every method-of-execution case to propose an alternative method of execution and clarifying that the petitioner also bears the burden of establishing that the alternative can be readily implemented.<sup>58</sup> Despite the state having already statutorily adopted the petitioner’s proposed alternative of execution by lethal gas in *Bucklew*,<sup>59</sup> the Court concluded that the petitioner had failed this test because he had not provided details about the necessary concentration of the gas, its administration, and the like.<sup>60</sup> (Never mind that the state would have better access to this information, especially considering that *Bucklew* was in prison.<sup>61</sup>)

As with the characteristics of an offender, like his competency or culpability, science can potentially tell us something about the pain associated with particular punishments. With respect to the death penalty, for example, science can potentially provide us with information about how the deadly drugs are administered, how they interact in a person’s body, and even the meaning of a defendant’s outward reactions to the drugs. In *Glossip*, the Court took something of an uncharacteristically deep dive into the state’s use of midazolam as the first drug in its three-drug

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<sup>57</sup> *Glossip*, 135 S. Ct. at 2737 (quoting *Baze*, 553 U.S. at 51–52).

<sup>58</sup> See *Bucklew*, 139 S. Ct. at 1129.

<sup>59</sup> See MO. REV. STAT. § 546.720 (2007) (“The manner of inflicting the punishment of death shall be by the administration of lethal gas or by means of the administration of lethal injection.”); see also *Bucklew*, 139 S. Ct. at 1142 (Breyer, J., dissenting) (“*Bucklew* identified as an alternative method of execution the use of nitrogen hypoxia, which is a form of execution by lethal gas. Missouri law permits the use of this method of execution. Three other States—Alabama, Mississippi, and Oklahoma—have specifically authorized nitrogen hypoxia as a method of execution.” (internal citations omitted)).

<sup>60</sup> See *Glossip*, 135 S. Ct. at 2737; see also Garrett Epps, *Unusual Cruelty at the Supreme Court*, ATLANTIC, Apr. 4, 2019, <https://www.theatlantic.com/ideas/archive/2019/04/bucklew-v-precythe-supreme-court-turns-cruelty/586471/> (criticizing the *Bucklew* Court for placing this burden on the petitioner).

<sup>61</sup> See Epps, *supra* note 60 (“This seems like a questionable assignment of the burden—an indigent inmate, locked 24 hours a day in a solitary cell, has fewer means of acquiring information than the state does.”); cf. Berry & Ryan, *supra* note 50, at 427 (making this same point regarding the burden of establishing a substantial risk of serious harm).

lethal injection protocol. It ultimately found that midazolam “can render a person insensate to pain” and was thus sufficient to meet Eighth Amendment requirements.<sup>62</sup> In reaching this conclusion, the majority emphasized that it owed deference to the district court and that the petitioner bore the burden to present evidence that midazolam (in the relevant dose) could not sufficiently render someone insensate to pain—at least so much so that the Eighth Amendment was violated. Even the *Glossip* Court recognized, though, that it lacked the expertise to properly assess the science in this arena. In fact, there is a pressing need for further scientific research and study about the interactions and effects of these drugs in humans.

Concentrating the Eighth Amendment analysis on pain poses several additional difficulties. First, we currently do not have a good way to measure pain. And, even if we did, at what point would a particular amount of pain—or the risk of that pain—become so severe that Eighth Amendment protection is warranted? And is it an individual’s subjective experience of pain or an objective measure of pain that matters in the Eighth Amendment calculus? Indeed, one individual may suffer significant pain as a result of the same treatment that causes very little pain to someone else. Although we know little about pain, we do know—from experience—that pain is subjective.

Neuroscience could have a role to play here. Although we are still waiting on even more robust useful information in this area, the field could have much to say about how much pain an individual is experiencing. Through measuring blood-oxygen levels in different parts of the brain, which experts correlate with neural activity,<sup>63</sup> fMRI could reveal how different punishments activate different parts of the brain and the level of intensity involved. Research into the “pain

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<sup>62</sup> *Glossip*, 135 S. Ct. at 2741.

<sup>63</sup> See Owen D. Jones et. al., *Brain Imaging for Legal Thinkers: A Guide for the Perplexed*, 2009 STAN. TECH. L. REV. 5, 17 (2009).

center” of the brain, which at least one expert has pinpointed as the dorsal posterior insula,<sup>64</sup> could help experts assess and scale this pain. Of course difficulties with this project abound. For example, does increased activity in this part of the brain indicate increased pain or, rather, could a lower level of activity suggest that the subject has become conditioned to pain and thus the pain does not register as well in the dorsal posterior insula or other areas of the brain? Again, questions also arise about whether a particular offender’s pain matters or whether the average pain of an individual subjected to a punishment should be what counts.

Another problem with the Court’s focus on pain in its method-of-execution cases is related to the multiple layers of secrecy shrouding today’s executions.<sup>65</sup> First, in contrast to the historical public spectacle of executions, modern executions are generally kept hidden from the public. Only a small number of invited observers may be present. Second, states often refuse to disclose the identities of their executioners, the drugs used to carry out lethal injections, and the manufacturers of those drugs. Third, where states still use a paralytic in their execution protocols, this drug hides the effects of the lethal cocktail on the person being executed by preventing the individual from screaming or writhing like might otherwise occur. These many layers of secrecy work to inhibit further understanding about the painful effects of the lethal injection protocol, as well as the associated risks of causing pain, that could result from an executioner’s lack of skill or experience, sloppy manufacturing practices and loose governing regulations, or the potency of the drugs themselves.

Certainly, more information related to the particulars of execution methods and techniques is important to providing content to the Court’s standards set forth in *Baze*, *Glossip*, and *Bucklew*,

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<sup>64</sup> See Andrew R. Segerdahl et al., *The Dorsal Posterior Insula Subserves a Fundamental Role in Human Pain*, 18 NATURE NEUROSCI. 499–500 (2015). *But see* Karen D. Davis et al., *Evidence Against Pain Specificity in the Dorsal Posterior Insula*, F1000RESEARCH (2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4566284/>.

<sup>65</sup> See Berry & Ryan, *supra* note 50, at 422–25 (outlining these layers of secrecy).

but obtaining reliable data is difficult in this area. There is not enough research on the bodily effects of the drugs and dosages used in lethal injections today. In part, there is not a significant market for deadly drugs used in humans that would drive research in this area. More importantly, though, there are significant ethical constraints on conducting this type of research. In most circumstances, one cannot ethically enroll human subjects to participate in a study about the extent to which injecting them with deadly drugs at lethal dosages causes pain. As additional executions are carried out using a particular technique, at least some data on the pain associated with these executions could multiply, but state secrecy related to executions will hamper this effect.

As with other areas of the law, injecting science into Eighth Amendment analyses can perhaps lead to more informed judgment about whether punishments—or even bail or fines—are unconstitutional. However, science can provide only the data and not conclusions about legal questions. As the Court attempts to buttress new Eighth Amendment decisions with science, it will have to confront additional difficult legal questions, particularly questions dealing with the objectivity versus subjectivity of brain structure and function, pharmacological effects in the body, and experiences of pain.

### **Data and Statistics**

Beyond science related to the offenders and punishments themselves, perhaps the richest source for more informed Eighth Amendment decision-making lies in broader troves of data and statistical analyses of that data. In recent years, there has been an explosion in the government's and others' formal use of data to inform important decisions. For example, online platforms like Facebook and Google employ user data to target advertisements to individuals most likely to be interested in the product. The medical industry uses data to improve treatment outcomes. And

judges in the criminal justice system often use data-powered algorithms to make more consistent decisions about bail, sentencing, and parole. Greater access to data and more prolific use of it could be used to help decide Eighth Amendment questions as well. For example, one could employ statistical analyses to conduct more robust studies about the deterrent value of various punishments. One could dig into data related to the effectiveness of rehabilitative efforts inside and outside of prisons. And better information about the role that prejudices—on race, sex, religion, ethnicity, or other factors—play in sentencing outcomes could help answer questions about whether punishments are imposed in an unconstitutionally arbitrary and capricious fashion.

Historically, though, the Court has not relied too heavily on data and statistics. In the Fourth Amendment context, for example, the Court generally does not look to data or statistics on popular conceptions of privacy when assessing the reasonableness of searches or seizures and, relatedly, “reasonable expectations of privacy.”<sup>66</sup> In the Eighth Amendment context, the Court similarly has been hesitant to rely on data and statistics in its decision-making. To be sure, the Court often examines how many jurisdictions have accepted or rejected a practice in determining the constitutionality of a punishment, but several Justices and commentators have characterized the Court’s state-counting in this regard as anything but scientific.<sup>67</sup> When invited to decide Eighth Amendment cases based on other types of data, the Court has been less hospitable to such an approach.<sup>68</sup>

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<sup>66</sup> See Meghan J. Ryan, *Juries and the Criminal Constitution*, 65 ALA. L. REV. 849, 851, 867 (2014).

<sup>67</sup> See, e.g., *Roper v. Simmons*, 543 U.S. 551, 608 (2005) (Scalia, J., dissenting) (referring to the Court’s evidence regarding state-counting as “flims[y]”); Meghan J. Ryan, *Does the Eighth Amendment Punishments Clause Prohibit Only Punishments That Are Both Cruel and Unusual?*, 87 WASH. U. L. REV. 567, 588 n.115 (2010) (noting “the Court’s inconsistency in its counting practices”); Tom Stacy, *Cleaning Up the Eighth Amendment Mess*, 14 WM. & MARY BILL RTS. J. 475, 552 (2005) (referencing the Court’s “creative jurisdiction counts”); see also *supra* text accompanying notes 18–19.

<sup>68</sup> *But see* CRAIG HANEY, *DEATH BY DESIGN: CAPITAL PUNISHMENT AS A SOCIAL PSYCHOLOGICAL SYSTEM* 10 (2005) (pointing out the prominent role of social science in the various Justices’ opinions in *Furman v. Georgia*, 408 U.S. 238 (1972) (per curiam)).

In *McCleskey v. Kemp*,<sup>69</sup> the Court explained the shortcomings of statistics in establishing that the death penalty was applied in a discriminatory way such that it violated the Eighth or Fourteenth Amendments. When the petitioner alleged that his death sentence was imposed in a discriminatory fashion—because a statistical study showed, for example, “that black defendants, such as McCleskey, who kill white victims have the greatest likelihood of receiving the death penalty”<sup>70</sup>—the Court rejected the persuasive value of the statistical evidence.<sup>71</sup> It explained that the statistics failed to prove intent to discriminate, as they did not provide evidence of intent to discriminate in McCleskey’s specific case. Although in some contexts the Court has allowed statistical evidence showing a pattern of discrimination to establish such intent, the *McCleskey* Court indicated that the capital context is different, because a uniquely composed jury, considering a variety of factors, makes each capital decision on an individualized basis. Accordingly, the Court concluded that “the application of an inference drawn from the general statistics to a specific decision in a trial and sentencing simply is not” dispositive in these cases.<sup>72</sup>

While these arguments might be relevant to the equal protection issue, one might have expected the statistical study in *McCleskey* to have greater impact on the Eighth Amendment decision, considering that, in *Furman v. Georgia*, the Court had struck down capital punishment as applied throughout the United States because it was imposed in an arbitrary and capricious manner.<sup>73</sup> Yet, when facing the Eighth Amendment question, the *McCleskey* Court again found the statistics unpersuasive. The Court explained that the cases resurrecting capital punishment after *Furman* allowed for, indeed even required, guided discretion for juries making capital sentencing

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<sup>69</sup> 481 U.S. 279 (1987).

<sup>70</sup> *Id.* at 311.

<sup>71</sup> For the purpose of its analysis, though, the *McCleskey* Court assumed that the statistical study at issue was methodologically sound. *See id.* at 291 n.7.

<sup>72</sup> *Id.* at 294.

<sup>73</sup> *See* DAVID L. FAIGMAN, LABORATORY OF JUSTICE: THE SUPREME COURT’S 200-YEAR STRUGGLE TO INTEGRATE SCIENCE AND THE LAW 259–60 (2004); *see also* *Furman v. Georgia*, 408 U.S. 238 (1972) (per curiam).

decisions. Not only is some measure of discretion necessary in these cases, the Court continued, but also it is often advantageous for defendants. The Court pointed out that the statistical study did not “*prove* that race enters into any capital sentencing decisions or that race was a factor in McCleskey’s particular case.”<sup>74</sup> “At most,” the Court said, “the . . . study indicate[d] a discrepancy that appears to correlate with race.”<sup>75</sup> The Court conceded that the statistics suggested “some risk of racial prejudice influencing a jury’s decision in a criminal case.”<sup>76</sup> However, the Court explained that such risks, as well as “[a]pparent disparities in sentencing,” are inevitable where jury discretion is involved.<sup>77</sup> “The question,” the Court said, “is at what point that risk becomes constitutionally unacceptable.”<sup>78</sup> The Court found that this was not the case here, and it emphasized that the data did not demonstrate the type of “major systemic defects” that led to the Eighth Amendment violation in *Furman*.<sup>79</sup> Moreover, accepting the petitioner’s argument condemning the discretion that contributed to any disparities in sentencing would be “antithetical to the fundamental role of discretion in our criminal justice system,” the Court said.<sup>80</sup> Adopting such a position could completely undermine the entire system.

Even though there has been a recent explosion of available criminal justice data—some that could perhaps inform Eighth Amendment decision-making—the Court has not rushed to embrace what statistical studies might suggest about various punishments and their constitutionality under the Eighth Amendment. Although this information could contribute to assessments about, for example, the true deterrence value of a punishment or the effect of a

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<sup>74</sup> *McCleskey*, 481 U.S. at 308.

<sup>75</sup> *Id.* at 312.

<sup>76</sup> *Id.* at 308.

<sup>77</sup> *Id.* at 312.

<sup>78</sup> *Id.* at 308–09. Moreover, in a later case, the Court reminded us that, even if statistics can provide insight to the risk of harm, the petitioner must also establish that the risk of harm is one that society will not tolerate—it is “so grave that it violates contemporary standards of decency.” *Helling v. McKinney*, 509 U.S. 25, 36 (1993).

<sup>79</sup> *McCleskey*, 481 U.S. at 313.

<sup>80</sup> *Id.* at 311.

defendant's race on sentencing, it has had little direct impact thus far. Paying attention to these studies could potentially build the foundation for a more evidence-based Eighth Amendment jurisprudence, but of course understanding the many nuances and full implications of these studies poses a challenge. The Court will likely have to wrestle with such information and the challenges that come along with it sometime soon.

### **The Court's Competency with Science**

A significant hurdle to the Court's reliable and accurate use of science and data in its Eighth Amendment cases is the Justices' general lack of fluency with these materials. The Justices have historically had difficulty understanding some of the science-based issues that have been relevant in a handful of the cases before them. For example, in the 2010 case of *City of Ontario, California v. Quon*,<sup>81</sup> a couple of the Justices demonstrated their lack of understanding of pager and text technologies. In oral arguments addressing a civil rights complaint against the city wherein a police officer asserted that his department's review of his text messages violated the Fourth Amendment prohibition on unreasonable searches and seizures, the Justices asked several questions to better understand the technology.<sup>82</sup> Chief Justice Roberts asked: "Maybe—maybe everybody else knows this, but what is the difference between a pager and e-mail?"<sup>83</sup> Justice Kennedy asked what would happen if someone were to send a text message to an individual while he was texting with someone else: Does the individual have "a voice mail saying that your call is very important to us; we'll get back to you?"<sup>84</sup> These somewhat humorous questions take on a very serious tenor if a lack of

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<sup>81</sup> 560 U.S. 746 (2010).

<sup>82</sup> See Ryan, *supra* note 66, at 884 (relating some of the Justices' questions from oral argument).

<sup>83</sup> Transcript of Oral Argument at 29, *Ontario v. Quon*, 560 U.S. 746 (2010) (No. 08-1332), [https://www.supremecourt.gov/oral\\_arguments/argument\\_transcripts/2009/08-1332.pdf](https://www.supremecourt.gov/oral_arguments/argument_transcripts/2009/08-1332.pdf).

<sup>84</sup> *Id.* at 44.

understanding about science or technology can affect life-and-death decisions as is often the case in the Eighth Amendment context. For example, Justice Powell—the author of the *McCleskey* opinion—admitted to his biographer that he did not understand statistics very well.<sup>85</sup> And one commentator has said that “it [is] clear from [Justice Powell’s] opinions that he had no interest in obtaining any [such understanding].”<sup>86</sup> Is it possible that, had Justice Powell and his colleagues better understood the statistical study introduced in that case, *McCleskey*’s life would have been spared?<sup>87</sup> A lack of scientific competency by the Court leaves a disquieting fog about whether a better understanding of the science could have caused the Court to reach a different conclusion.

Even when the Court has given greater credence to the science, though—as in *Roper*, *Graham*, and *Miller*, where the Court relied on psychology and neuroscience—there are still questions about the appropriateness of the Court’s actions. For example, in *Roper*, Justice Scalia pointed out that the majority relied on “scientific and sociological studies, picking and choosing those that support[ed] its position,” but “[i]t never explain[ed] why those particular studies are methodologically sound,” and “none [of them] was ever entered into evidence or tested in an adversarial proceeding.”<sup>88</sup> And in *Graham*, Justice Thomas, while not entirely convinced that the Court’s reliance on “developments in psychology and brain science” was appropriate, accused the Court of “misstat[ing] the data on which it relie[d].”<sup>89</sup> Further, he explained that scientific evidence does not support the *moral* conclusion that forms the Court’s independent judgment. Whether a lack of competency with science could cause the Justices to overlook relevant information or

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<sup>85</sup> See FAIGMAN, *supra* note 73, at 258.

<sup>86</sup> *Id.*

<sup>87</sup> Later in his life, Justice Powell explained that, if he could change his decision in just one opinion, it would be in the *McCleskey* decision because he “ha[d] come to think that capital punishment should be abolished.” JOHN C. JEFFRIES, JR., JUSTICE LEWIS F. POWELL, JR. 451–52 (1994).

<sup>88</sup> *Roper v. Simmons*, 543 U.S. 551, 616–17 (2005) (Scalia, J., dissenting).

<sup>89</sup> *Graham v. Florida*, 560 U.S. 48, 117 (2010) (Thomas, J., dissenting).

whether it might steer the Court in the wrong direction, a lack of scientific understanding could lead to questionable or even erroneous Eighth Amendment outcomes.

Perhaps the biggest effect of the Justices' lack of competency and resulting lack of confidence with science is its regular deference to state legislatures and lower courts on these scientific matters. With regard to insanity and intellectual disability, for example, the Court has historically left it to the various jurisdictions to define these terms, leaving the Court's determinations that insane and intellectually disabled persons cannot constitutionally be executed as hollow promises than they could be. The Court has somewhat rectified this possible misstep in recent cases, though, outlining some minimal requirements at least for jurisdictions' definitions of intellectual disability.<sup>90</sup> Another example of the Court providing significant deference to lower courts can be seen in the *Glossip* decision's reliance on the district court's assessment of whether the use of midazolam in its three-drug lethal injection cocktail created a substantial risk of severe pain. The Court justified this deference not only by the standard of review generally accorded to lower court factual determinations but also by explaining that "federal courts should not embroil themselves in ongoing scientific controversies beyond their expertise."<sup>91</sup> Unfortunately for the petitioner, this also led the Court to require the *petitioner* to bear the burden of establishing a substantial risk of severe pain.<sup>92</sup> Overall, this deference to legislatures on the science underlying the Court's Eighth Amendment decisions creates concerns about a lack of uniformity in some Eighth Amendment baseline for punishments and also the risk of the Court creating powerful precedential case law based upon erroneous fact-finding.

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<sup>90</sup> See, e.g., *Moore v. Texas*, 137 S. Ct. 1039 (2017); *Hall v. Florida*, 572 U.S. 701 (2014).

<sup>91</sup> *Glossip v. Gross*, 135 S. Ct. 2726, 2740 (2015); see also *Baze v. Rees*, 553 U.S. 35, 51 (2008) (plurality opinion) (referring to the problem of "embroil[ing] the courts in ongoing scientific controversies beyond their expertise").

<sup>92</sup> See *Glossip*, 135 S. Ct. at 2740.

## **A Changing Landscape**

The Eighth Amendment landscape is ripe for change. As the Court has made clear, the meaning of the Amendment shifts as society evolves. And society is regularly undergoing significant transformation, especially today when advances in science and technology are accelerating at an astonishing pace. Science and the information it produces can create change by facilitating greater understanding of offenders and punishments and also by affecting the mechanics of punishment practices. Further, science can help measure societal change. Fully understanding the changes that science precipitates, or even measures, is a challenge. Generally untrained in the various scientific disciplines, the Supreme Court Justices, and judges in general, are confronted with the difficult task of attempting to understand this new information and its implications for important questions like the constitutionality of bail, fines, and punishments under the Eighth Amendment. Although the Court has not, in recent years, squarely faced a head-on challenge with data like it did in *McCleskey*, our dynamic societal landscape and changing punishment practices may require the Court to more directly wrestle with these knotty issues sometime in the near future.