Deborah Denno GrW'82 L'89 is one of the country's leading scholars in the highly charged realm of the death penalty. BY ANDREW FAUGHT

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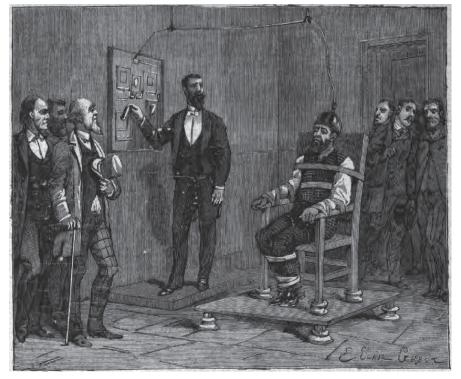
hen 1,000 volts failed to dispatch the killer, New York correctional officials went to Plan B. They dialed up the current to 2,000 volts. The charge was delivered through electrodes attached to the head and back of convicted murderer William Kemmler, a Philadelphia native who, moments earlier, had urged the warden to "take it easy and do it properly."

Eight minutes after it had started, the world's first execution by electrocution was complete, though not as planned. The death chamber reeked of burning flesh, the Aug. 6, 1890, edition of the *New York Herald* reported. "Men accustomed to every form of suffering grew faint as the awful spectacle was unfolded before their eyes." A century and a quarter later, Fordham University law professor Deborah Denno GrW'82 L'89 reflects on a case that underpins her career as one of the country's top death-penalty scholars.

"Kemmler is the big case that really starts the country thinking about the Eighth Amendment's cruel-and-unusualpunishment clause," she says of the proviso adopted by the Founding Fathers a full century before the Buffalo execution. "It was this philosophically and legally grand amendment that initially captivated me. On principle, it stands for everything that is good about the legal system."

For Denno, the death penalty, through all of its rancor and emotion, is above all about constitutional probity. Her scholarship is credited with helping to force a reexamination of capital punishment's place in the national character. Even Supreme Court justices have looked to her writings for guidance.

In March, the Boston College Law Review is scheduled to publish Denno's article on the role of neuroscience–specifically its use in determining the level of brain function during a defendant's commission of a crime–in adjudicating penalties, including the death sentence.



The execution of William Kemmler, August 6, 1890.

Denno has been scrutinizing capital punishment since 1991, when, as a law clerk, she was one of the first voices to challenge electrocution's successor, lethal injection, on the grounds that it, too, violates the Eighth Amendment. That went against the prevailing wisdom that lethal injection was a kinder and gentler means of administering the ultimate justice. But after a quartet of highly publicized botched lethal injections last year in Ohio, Oklahoma, and Arizona (in one of which the condemned took nearly two hours to die), Denno has found herself in the death-penalty spotlight. And she does not parse words.

"If we need to kill them," she asks, "must we torture them?"

eath by lethal injection is supposed to take 10 minutes. New and unpredictable drugs have changed the calculus. Now, after more than 1,200 executions, many of the 32 states with the death penalty—all of which use lethal injection as their preferred medium—are rethinking the ethics and efficacy of a practice that has generated its full share of lurid headlines.

When Dennis McGuire was executed last January in Ohio, the process took 25 minutes, and witnesses said that he gasped repeatedly throughout that time. It's thought to be the slowest execution in that state's history. Two executions went badly awry in Oklahoma last year. On April 29, Clayton Lockett suffered a heart attack after the injection initially failed to kill him; he finally died after 43 minutes. Three months earlier, injection had failed to render Michael Lee Wilson unconscious. Moments before dying, he was heard to say: "I feel my whole body burning."

The death penalty is still supported by 60 percent of Americans, but that is the lowest share since 1972, when 57 percent of respondents to a Gallup Poll survey said they favored capital punishment. And the most recent statistic is from 2013, before the latest high-profile botches. Denno privately opposes the death penalty but remains professionally neutral on the subject, focusing on the way in which death is administered. Capital punishment need not be a grotesquerie, she argues.

"The United States is considered one of the most punitive countries in the world," she says. "I hope my legacy will be to help alter our country's penal status by providing a more informed perspective on our methods of execution, knowing that facts and sound arguments are among the best vehicles for change."

She's been at this for the better part of two decades. In 1997, when no one was challenging the constitutionality of lethal injection, Denno took part in the first-ever evidentiary hearing to consider protocol snafus. It came in Texas, long home to the nation's busiest death house. The hearing allowed attorneys for a convicted murderer to air concerns about lethal injection.

The judge consulted Denno's first article (published in the *William & Mary Law Review* in 1994), "Is Electrocution an Unconstitutional Method of Execution? The Engineering of Death over the Century." Although the condemned was ultimately executed, Denno says the hearing was the first "chip" at a system that—in addition to the Eighth Amendment concerns—has also been criticized for disproportionately targeting defendants of color.

Denno would go on to testify elsewhere around the country, and her writings invariably stirred judicial angst. Jurists, she says, were routinely surprised at the caprices of lethal injection. Slowly, almost imperceptibly, Denno was shifting the national conversation.

"I do think those who are otherwise inclined toward capital punishment-but who have a more modulated view of the subject-are beginning to question the death penalty," says Joshua Dressler, the Frank R. Strong Chair in Law at Ohio State University, who met Denno while both were teaching at Fordham. "One of the things that I most respect about Debby is that she is thoughtful, reflective, and careful about how she thinks about an issue. If you were listening to her, you would not get the impression that she has some sort of agenda."

By 2007, The National Law Journal was praising her writings. That same year, US Supreme Court Chief Justice John Roberts twice cited a 1994 Denno article published in the American Journal of Criminal Law, "Testing Penry and Its Progeny," which considered whether biosocial influences could predict violent crime. In 2008 the high court again cited Denno as it considered Baze v. Rees, regarding the constitutionality of lethalinjection protocol in Kentucky. Roberts cited four of Denno's articles in his plurality opinion, and three other justices-Samuel Alito, Stephen Breyer, and John Paul Stevens-did the same in their concurring opinions. The court ruled that while accidental or unavoidable pain did not violate the Eighth Amendment's cruel-and-unusual threshold, creating an "objectively intolerable risk of harm" was, indeed, unconstitutional.

Four years ago, the Illinois-based pharmaceutical company Hospira, the sole producer of sodium thiopental, stopped making that drug because it didn't want to be associated with executions. States then switched to pentobarbital, another short-acting barbiturate, but its Danish manufacturer forbade its use in executions. As Denno explained last year in "Lethal Injection Chaos Post-Baze" (Georgetown Law Journal), those decisions have forced state departments of correction around the country to turn to mom-and-pop compounding pharmacies, which can make drugs from scratch. The pharmacies, while overseen by state pharmacy boards, are not regulated by the Food and Drug Administration and in some case have mixed safety records. The botched executions last year all used compounded drugs that had been criticized by anesthesiologists as unpredictable.

As Joseph Rudolph Wood was readied for death in Arizona on July 23, Denno sat in her eighth-floor Fordham office, communicating with other death-penalty scholars on a listserv about the proceedings unfolding more than 2,400 miles away.

For sheer, ugly drama, Wood's execution would trump the three previous botched executions. Officials injected him with a compounded combination of midazolam and hydromorphone, used only once before in a lethal injection—in Ohio's botched execution of McGuire nine months earlier. When the first injection didn't work, they made 14 more attempts, as Wood's attorneys fruitlessly filed an emergency motion to stop the execution with the Supreme Court.

"He has been gasping and snorting for more than an hour," they wrote in their motion. "He is still alive."

Two hours later, after what is presumed to be the longest execution on American record, Wood died.

"It's like knowing someone right outside your window is being killed—and killed over the course of an hour—and you can't do anything about it," Denno says. "He was literally suffocating, doing everything that expert anesthesiologists were saying that he would. This person was in torment, and these Arizona officials had no idea what they were doing. It was worse than a slaughterhouse."

Arizona, which has no pending executions, is now reviewing its lethal-injection protocols. So is Ohio. Oklahoma officials recently instituted a six-month stay on future executions while awaiting the results of an investigation into what went wrong.

A number of states have authorized legislative commissions to study the death penalty, including lethal injection. Tennessee is even considering reinstating the electric chair if it can't secure the appropriate lethal-injection drugs. (Denno, perhaps with the shade of Kemmler in mind, is preparing an affidavit highlighting the problems associated with electrocution.)

This past September, Pennsylvania Governor Tom Corbett granted a temporary reprieve to convicted murderer Hubert Michael, on the grounds that the state Department of Corrections lacks the drugs to carry out executions. Corbett has vowed to carry out the sentence of the court, though since he failed to win reelection in November and will leave office on January 20, the decision may be out of his hands.

Michael's attorney, David Rudovsky, a civil-rights lawyer and senior fellow at Penn's Law School, isn't sure what the future holds for capital punishment in Pennsylvania, which hasn't executed anyone since 1999.

"To my knowledge, sodium thiopental is not available," Rudovsky says. "In Pennsylvania at this point, the death penalty is very problematic. We don't know what the state intends to do, what type of drugs they intend to use, and how and if they'll be able to get them."

Rudovsky, who met Denno during her Law School days, has been working with her since 2008 to halt lethal injections on the grounds that using drugs other than those prescribed by state statute is illegal. He credits Denno with playing "a central role in what's developed over the past 15 years or so." Through her academic research and writing, he adds, "she's been the most incisive and perceptive voice on the various medical and legal issues—and, to some extent, the moral issues."

rom the age of 10, Denno lived with the specter of death. Her father, an Army colonel who served two combat tours in Vietnam, was seriously injured in an attack on his tank, in which he was the lone survivor. Having been raised at Kansas' Fort Riley (home to the Army's 1st Infantry Division) and later in Arlington, Virginia, she was surrounded by military families riven by war, injury, and death.

"You're thinking every day that your parent could be killed," she says. "It had a huge effect. From a very early age, my birthday wish was that my father wouldn't die. I was a military brat, so the whole notion of death and suffering is a topic that was with me all of the time. You see the world differently as a result. I thought something should be done about the way people treat each other in terms of physical violence."

Denno abhors violence, and can't watch violent movies. She's also become a stickler about guarding her privacy, since the dark nature of her work has led some "very unusual people to write some very unusual emails" to her, and she was once targeted by a stalker. Yet she describes herself as a "very upbeat, positive, and cheery person," which she acknowledges "might be surprising to people."

Her desire to push death-penalty debates into new territory has led Denno to challenge the issue on another front: this one involving the rights of the accused as laid out by the Sixth Amendment. Specifically, she's investigating whether attorneys are fairly representing their clients on a neuroscientific level. In other words, are attorneys doing their due diligence to determine whether biological factors might have driven a client to kill?

Denno's deep interest in the subject goes back a long way. Having earned her doctorate in criminology in 1982 (back when that department was part of the Wharton School), she spent the following four years researching biology and violence as a senior research associate at Penn's Sellin Center for Studies in Criminology and Criminal Law. (Her doctoral dissertation was on biology and violence, which formed the basis of her 1990 book from Cambridge University Press, Biology and Violence: From Birth to Adulthood.) She was deeply influenced by the late Marvin Wolfgang G'50 Gr'55, the sociologist and criminologist whose landmark 1972 book, *Delinquency in a Birth* Cohort, tracked the delinquency rates of 10,000 Philadelphia boys born in 1945.

Wolfgang, who died in 1998, abjured black-and-white thinking and inculcated Denno with the same sensibility. She was equal to the task, compiling a data set with "every conceivable variable that you could think of—biological, sociological, and environmental," she recalls, adding that the database "really let us test the strength of this interdisciplinary approach to criminality."

Wolfgang drove his students "with a high standard of precision and intellect," says Denno, and she eventually concluded that his seeming aloofness was actually something closer to shyness. Either way, "we all pretty much put Marvin on a pedestal."

"Usually you had this camp in sociology and criminology that either had a philosophical-qualitative approach to explaining behavior, or they had a very hard-core empirical approach," Denno adds. "As a graduate student, you fell into one or another. But that wasn't Marvin. He appreciated qualitative and empirical work, and he really led the way.

"I had the interest to begin with, and the statistical training, but it was at Penn that I was able to take it full throttle," she says. "Criminology and juvenile delinquency and problem behavior are very complex, and to look at them in just one way is not telling the full story. Violence is a very rare behavior, so to try to fully understand it, you have to look at it through many different lenses and mirrors."

Using the findings, Denno was the first researcher to link lead poisoning to vio-

lent behavior. "The more you know about it," she says, "the more you realize that it's a natural precursor to criminality." She also served as a consultant to the New Jersey Public Defender's Office, studying the "race effect" on those convicted of a capital offense. Her research showed that most defendants slated for the death penalty were African-American men who had committed crimes against white victims.

It was while at the Sellin Center that Denno met Ruben Gur, professor of psychology (and director of Neuropsychology, the Brain Behavior Laboratory, and the Center for Neuroimaging in Psychiatry), who has testified in more than 100 courtroom penalty phases in which the state of a defendant's brain-functioning has been called into question.

Gur recalls Denno well. "She was looking at biological determinants, and I was particularly interested in her project," he says. "Debby exemplifies the activist scholar, and she's someone who maintains a high level of scholarship and sophistication in social-science research. At the same time, she's dedicated to making a difference in the world."

On Wolfgang's enthusiastic recommendation, Judge Anthony Scirica took on Denno as a clerk in the US Court of Appeals for the Third Circuit. Denno went on to get her law degree from Penn in 1989.

"She was an extraordinary law clerk, everything a judge would want," says Scirica, a Penn adjunct professor who teaches civil procedure and complex litigation. "Her work with Marvin certainly added a dimension that most law clerks simply don't have. Those who work in the criminal-justice system should understand many things besides the black letter law, including a deep understanding of sociology and psychology. Debby was certainly well versed in all of that."

When neuroscience evidence is used by a defense team, Denno found, it routinely serves as a mitigating factor during a trial's penalty phase—in some cases sparing a defendant death and instead netting them a life sentence. She also turned up a "disproportionate" number of cases— 77—in which lawyers were deemed to have rendered ineffective counsel. In those cases attorneys either never investigated neuroscience evidence, or they knew about it and didn't introduce it—or they introduced it in the wrong way. In compiling her research, Denno consulted with Michael Flomenhaft, a New York-based attorney in what he characterizes as "a neuroscience-focused firm."

Lawyers have been trying for decades to answer questions best addressed through science. "Neuroscience was the better avenue by which to answer these questions, but there wasn't an appreciation of it," Flomenhaft says. "Debby realizes that the quality of justice can very much pivot on the inclusion or exclusion of neuroscience, and she's a strong advocate for that. Justice is often not being served to the extent that this information is not part of the evidence." She is, he adds, a "champion of justice."

Research has shown that many criminal behaviors can be traced to personality and behavioral disorders; disorders resulting from substance abuse, schizophrenia, schizotypal, and delusional disorder; and organic mental disorders caused by medical or physical disease. sounds obvious, but there are so many cases of attorneys who never investigate their clients' cases or who do a bad job. *Fair* could [still] mean that a defendant gets the death penalty, but at least this evidence would have been looked at and juries would have heard it."

Take the case of John McCluskey, who in the summer of 2010 broke out of a medium-security prison in Arizona, murdered a just-retired Oklahoma couple who were passing through, then burned the trailer that held their bodies. A jury rejected the death penalty, and instead sentenced McCluskey to life in prison without the possibility of parole. The reason? Brain scans revealed that a stroke-damaged cerebellum and a malformed frontal lobe affected McCluskey's abilities to control impules.

"It's not black and white, what should happen to these people," says Denno, who highlights that case in her paper. "Decisions

"You're supposed to balance aggravating factors—such as torture, or killing a police officer or a pregnant woman against a wide range of mitigating factors. Defendants are entitled to that."

The US Supreme Court requires attorneys in capital cases to conduct a "thorough investigation" of their clients, which includes examining neuroscience evidence that could spare a defendant's life. Attorneys who aren't thorough could be marked with a scarlet letter: an *ineffective assistance of counsel* sanction that could necessitate a retrial.

"It's clear that this is the direction that courtrooms are heading in, and they view this information as very important," says Denno, who sees her upcoming *Boston College Law Review* paper ("The Myth of the Double-Edged Sword: An Empirical Study of Neuroscience Evidence in Criminal Courts") as a chance to call out bad lawyering. "I'm not trying to embarrass anybody, but I view this paper as part of the blueprint, or primer, for attorneys who are arguing these cases. They don't have to make these mistakes. It should be made as close to the person's culpability level as possible. On the other hand, even after having that fuller palate of information, a jury may think—and there are many cases showing this—that the defendant is so vile that they should be executed. You're supposed to balance aggravating factors—such as torture, or killing a police officer or a pregnant woman—against a wide range of mitigating factors. Defendants are entitled to that."

In Gur's opinion, neuroscience offers predictable findings when it comes to crime.

"Brain damage can explain certain aspects of a crime and why it's difficult for the defendant to determine the big picture," he explains. For example, any injury to the limbic system—the part of the brain that controls emotion and behavior, among other duties—can in turn affect the organ's "executive control system" in the frontal lobe. That system interprets

information and, depending on the stimulus, decides on a course of action.

"If you have damage in the limbic system, you have fairly predictable deficits," he notes. "People who have a damaged amygdala, for example—people who normally would be placid—can go into a rage. Behavior is complex. We are better able to describe it in the language of neuroscience."

Gur has seen some "really amazing defense teams work hard to obtain mitigating information," he says. He has also seen some that are "not so good, shrugging their shoulders and moving on."

Keeping perpetrators off death row raises obvious questions. Should they receive lighter sentences because of faulty brain physiology? Or should they be given tougher sentences to prevent future crimes that, some argue, are bound to happen?

Much of the debate "centers on the mistaken assumption that neuroscience evidence will be introduced either to justify the freeing of violent criminals or to facilitate unjust predictions about defendants' future dangerousness," Denno writes. Her neuroscience work will culminate in a booklength project analyzing the impact of neuroscience on criminal intent and conduct.

The latest research "directly controverts the popular image of neuroscience evidence as a double-edged sword—one that will either get defendants off the hook altogether or unfairly brand them as posing a future danger to society," she writes in the paper's introduction. "To the contrary, my study indicates that neuroscience evidence is typically introduced for well-established legal purposes—to provide fact-finders with more complete, reliable, and precise information when determining a defendant's fate."

The ideas behind neuroscience have been used in court proceedings since the 17th century, Denno says, though the word itself wasn't used until 1963.

"This is such a big topic in criminal law, and it has been for many years, but no one has much of a perspective on it," she says. "Everybody who talks about it will focus on a high-profile case or two, usually something that's been highlighted in the newspaper. The singular cases are interesting and they make for good stories, but they're not always representative of what's going on in the real world. That's where I'm coming from." • Andrew Faught is a freelance writer based in California.