It is perhaps unusual to write an academic review of a casebook. After all, the received wisdom in academia is that casebooks rank somewhere just above book reviews in the hierarchy of intellectual merit. When I began my career in teaching, I received no shortage of advice about different forms of scholarship. Despite the fact that many of the biggest names in scholarship had pinned their names to casebooks, I was advised in no uncertain terms that I should make my name first, write the casebook later. Just why casebooks receive such disdain is not often spelled out clearly for young law professors. Largely, their low place in the pantheon of scholarly output is broadly associated with them being “doctrinal” or “derivative,” and thus not sufficiently original, pathbreaking.

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or, what all scholars aspire toward, paradigm shifting. Casebooks typically describe a field, they do not define it. While this might be true of the latest contracts or property casebooks, it was certainly not the case when Samuel Williston or John Chipman Gray were writing the first casebooks in their respective fields. But, alas, there are fewer and fewer such opportunities, for the law school curriculum is by now well-plowed ground. Law and neuroscience, however, provided Professors Owen Jones, Jeffrey Schall, and Francis Shen an opportunity, one they fully exploited. Like Williston and Gray before them, they used this opportunity to impose order on a field that, at least prior to their work, had little. Their casebook has given definition to the exploding field of law and neuroscience. This, it turns out, is potentially paradigm-shifting stuff.

_Law and Neuroscience_ adopts a fairly standard approach to constructing a casebook, albeit on a subject that is anything but standard. It builds its lessons largely around case law and includes bountiful Socratic-style questions for the reader to mull over. Thus, while Jones, Schall, and Shen help to define their field, they did not set out to reinvent the casebook. Their volume, however, does contain considerably more textual material than the average casebook—made up of excerpts from law reviews and monographs, as well as robust sections of notes and questions—but the cases form the skeleton on which all else hangs. These materials are all excellent and the authors have edited them with sharp pens and discerning eyes. Indeed, at times—as exemplified early on by their use of Virginia Hughes’ *Nature* article on the Brian Dugan case—the casebook turns into a real page-turner.

Although the authors have chosen a conventional form, the materials and the pedagogy they reflect are unconventional. The authors set out to educate the reader regarding the basics of the science in more detail than the typical interdisciplinary casebook. Most interdisciplinary efforts organize the material largely around a legal framework, with the “other” discipline providing insights into age-old empirical questions of abiding concern to the law. Of course, most “law and” disciplines concern subjects that law students know something about. Unlike history, political science, psychology, or economics, neuroscience will be unfamiliar to the average law student. Hence, the authors confront the challenge of persuading readers of the importance of science to a legal education, as well as to persuade them that neuroscience ought to be part of that education. And, once such convincing is accomplished, which occurs...

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2. This concept fittingly comes from the study of the history of science and is associated with Thomas Kuhn’s study of scientific revolutions. See generally THOMAS S. KUHN, _THE STRUCTURE OF SCIENTIFIC REVOLUTIONS_ (1970).


5. Id. at 5–8.

largely in chapters one through six, the real work begins. Although they do it
gently and in plain English so far as the subject permits, readers soon find
themselves deep in the gyri and sulci of the cerebral cortex.

Following this necessary, but challenging, introduction to the biology of
the brain and the technology of studying it, the authors wade into the areas that
have so far received the most research attention. This part of the casebook,
chapters ten through eighteen, provide a wide and relatively deep palette of
issues to explore the significance of neuroscience to legal decision making.
Although early chapters considered the big picture issues of, for instance, the
continuing validity of the notion of “free will” in light of modern neuro-
science, it is these latter chapters that give definition to the exploding field of
neuroscience. They provide the framework for understanding how, in practical
and concrete ways, neuroscience is likely to have influence on the law. In
short, properly understood, neuroscience is unlikely to revolutionize legal
conceptions of responsibility and blameworthiness. Folk psychological notions
such as free will, at least to the extent they are relevant to actual legal doctrine,
are here to stay.8 Neuroscience, however, has the potential to be highly influ-
ential as a form of scientific evidence, and possibly more so than traditional
psychological research. How it is understood, and that it is understood well,
are crucial.

In fact, the big questions, such as those raised by neuroscience’s impact
on our understanding of free will, frame several of the pivotal issues that con-
front the day-to-day concerns associated with law and neuroscience. Specifi-
cally, can the neuroscience—should the neuroscience—be integrated into legal
conceptions of justice and fairness? If neuroscience might be thought to en-
danger fundamental assumptions like free will, might it not come to inform,
and even define, notions of competency, intent, negligence, and other legal
concepts? And, relatedly, just what does having a window into the human
brain provide to the law? Although not identified as distinct questions by the
authors, Law and Neuroscience necessarily must maneuver through these
thickets. In Part I, I consider the first issue, the disciplinary boundaries in-
herent in interdisciplinary pedagogy. In Part II, I turn to the issue of just what
this window into the brain provides the law. Finally, I offer some general
thoughts and tentative conclusions.

I. DISCIPLINARY BOUNDARIES

The first principle of most interdisciplinary work is that the disciplines
sought to be joined are free-standing and entirely separate enterprises.9 Neuro-

8. See generally 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) (“The only
practical free will problem in law is the confusion among lawyers, scientists and others who think
that free will is a legal criterion or who speak and write as if it is.”).
9. This is at least true for interdisciplinary work that involves separate professions, such as
the many “law and” interactions with psychology, history, political science, and so forth. Within
professions, such as within the sciences, interdisciplinary work might indeed lead to a melding of
science did not arise to answer pressing empirical questions raised by lawyers and lawmakers.\footnote{10} Like all fields in mainstream science, from acoustics to zoology, neuroscientists study brain function to answer questions of interest to them.\footnote{11} Indeed, I would hazard the hypothesis that most working neuroscientists have little understanding of disputed legal concepts and that few have any interest in learning about them. Neuroscientists could live long and productive lives without any interaction with lawyers or lawmakers. Most would likely prefer it that way. Similarly, although the many domains of the law raise empirical questions that might be addressed by neuroscience-related research, most lawyers have little if any understanding of brain function. Most lawyers happily ply their trade with little or no working knowledge of the sciences,\footnote{12} much less neuroscience. Nor do most judges or policy makers know how research might provide answers to some of the most pressing empirical questions they have. Writing an interdisciplinary casebook, therefore, requires mapping the borders between two entirely separate disciplines, disciplines that share little in terms of background assumptions, methodologies, cultures, language or standards of success.

Given the fundamental divide between the fields of neuroscience and law, the first question in any interdisciplinary pedagogical enterprise is to define its purpose. Specifically, is the objective to find shared territory between the two, or, more functionally, to describe how each might interact with the other, either for mutual benefit or, at least, without excessive detriment? Jones, Schall, and Shen have largely selected the latter path and thereby maintained the respective intellectual integrity—and insularity—of the two disciplines. Thus, a basic premise of the casebook appears to be that lawyers and lawmakers can potentially benefit from findings in neuroscience and thus it behooves them to know something about the subject. However, neuroscience neither defines the questions that law needs to have asked nor determines whether they have been satisfactorily answered. To be sure, neuroscientists could benefit from knowing the once separate disciplines into a single area of study. \footnote{10. Throughout this review, I refer to “lawyers and lawmakers” to reference legal actors and institutions more generally, including in addition to these two, courts, administrative agencies, and legislatures. The casebook, of course, is directed at law students (i.e., lawyers to be) and mainly concerns lawmaking issues surrounding neuroscience research. Hence, my focus is on how the book educates lawyers and contemplates the use of neuroscience in lawmaking.\footnote{11. Many ostensible scientific fields employed in the courtroom do not manifest this institutional independence. Most notable in this regard are the forensic identification sciences, such as fingerprints, tool marks, bite marks, and so forth. These “police sciences” have as their primary audience the courts. See generally Michael J. Saks & David L. Faigman, Failed Forensics: How Forensic Science Lost Its Way and How It Might Yet Find It, 4 ANN. REV. L. & SOC. SCI. 149, 151 (2008) (“Although courts provide the primary markets for the experts coming from these fields, they have done virtually nothing to evaluate critically the bases for the opinions that representatives from these fields offer into evidence.”)\footnote{12. See Jackson v. Pollion, 733 F.3d 786, 788 (7th Cir. 2013) (“Innumerable are the lawyers who explain that they picked law over a technical field because they have a ‘math block’—‘law students as a group, seem peculiarly averse to math and science.’”) (quoting 1 DAVID L. FAIGMAN ET AL., MODERN SCIENTIFIC EVIDENCE: STANDARDS, STATISTICS, AND RESEARCH METHODS, at v (student ed. 2008)).}
the kinds of questions to which the law needs answers, because, if they sought to have a legal impact, it might influence how they defined their research questions. In this Part, I consider two main choices that inevitably confront the interdisciplinary casebook, both of which the authors manage well. The first concerns mapping the territory on which law and neuroscience meet. The second, and more challenging task, concerns the bridges that must be built to usefully connect the two.

A. “NeuroLaw” or “Law and”

As neuroscience has increasingly been understood as potentially influential in legal decision making, the term “neurolaw” has gained traction as a label for this conjunction. 13 Most other areas of science that present similar collaborative opportunities have employed the less poetic “law and” designation, such as law and psychology and law and economics. No one, it seems, has suggested neurolaw-like labels in these areas. To be sure, psycholaw sounds like a syndrome suffered by first-year law students and econolaw sounds like a minivan. But the more substantial reason to avoid such integrative titles is the fact that the fields never—and should never—integrate. Neuroscience and law border on one another in a variety of areas, but they do not share common ground. From a pedagogical or professional level, there are neuroscientists who know law, and lawyers who know neuroscience, but there are no neurolawyers. Thus, and quite appropriately so, the title of the book is Law and Neuroscience, though the term neurolaw does make an appearance from time to time.

From an educator’s standpoint, the insularity of the disciplines presents an immediate difficulty. If the goal is to teach lawyers neuroscience and neuroscientists law, can this be done in a single text? Jones, Schall, and Shen appear to have answered this question with a definite “no.” They wrote a “casebook,” which is the traditional text in the law school classroom. To be sure, the authors suggest that the text might also serve students in other disciplines, including neuroscience, psychology, philosophy and related disciplines. 14 And indeed it might. But as the authors themselves note, it is impossible for a single text to be all things for all audiences. They had to choose a perspective, a primary audience, and the one they chose was law. This turns out to be a key decision, because it largely establishes the subsequent content and organiza-

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13. See, e.g., Stacey A. Tovino, Will Neuroscience Redefine Mental Injury? Disability Benefit Law, Mental Health Parity Law, and Disability Discrimination Law, 12 IND. HEALTH L. REV. 695, 695–96 (2015) (“Within the overlapping fields of neurolaw and neuroethics, scholars have given significant attention to the implications of advances in neuroscience for issues in criminal law, criminal procedure, constitutional law, law and religion, tort law, evidence law, confidentiality and privacy law, protection of human subjects, and even the regulation of neuroscience-based technologies.”). See generally Steven K. Erickson, Blaming the Brain, 11 MINN. J.L. SCI. & TECH. 27, 35 (2010) (“Neurolaw owes its fame to a modest and seemingly innocuous beginning. Lawyer J. Sherrod Taylor coined the term during the early 1990s to describe the ‘converging courses’ of neuropsychology and the legal system.”) (citing J. Sherrod Taylor et al., Neuropsychologists and Neurolawyers, 5 NEUROPSYCHOL. 293, 293 (1991)).

14. JONES ET AL., supra note 4, at xxxi.
The contents were crafted primarily to serve the pedagogical needs of a legal audience being introduced to a foreign subject. But this decision illustrates an important lesson. Since there is no separate discipline or group of practitioners that “do” neurolaw, the materials must be elementary enough to be manageable for readers with little background in the subject, but complex enough to not misrepresent its content.

Since law and neuroscience operate almost entirely in separate domains, the issue arises as to whether knowing something about the other could help lawyers and scientists do their work. What use is there to lawyers and lawmakers of knowing neuroscience or to neuroscientists of knowing the law? These are largely separate questions and the answer to one does not necessarily relate, at least not directly, to the other. Whether lawyers and lawmakers should know neuroscience depends entirely on whether this research will help them do their jobs. Neuroscience is thus a tool that might better enable those in the law to make informed legal judgments or decisions. Whether neuroscientists should understand the law depends similarly on whether that knowledge will help them do their jobs. The law thus might provide neuroscientists with subjects of study that improve the quality, scope or impact of their research.

Although Jones, Schall, and Shen do not articulate this separation explicitly, the principle of distinct boundaries weaves through every chapter. Neuroscience is presented to the reader as a wholly separate discipline with innumerable assumptions and limitations that are endemic to its scientific bona fides. The neuroscience described in Law and Neuroscience is neither science-lite for lawyers, nor a discipline that is parasitic on the law. It is a mature and complex science that, without necessarily intending to, provides glimpses into domains that the law has historically been interested in seeing into. Moreover, its value to the law depends on its answering the questions that the law is asking. To the extent that it provides such insights, it behooves lawyers and lawmakers to consider it. When it does not, they should not.

The separateness of the disciplines of law and neuroscience means that there are, and in all likelihood will always be, barriers to the law’s use of neuroscience. Principal among these challenges is the problem of translating neuroscience so that it can be understood by, and be useful to, lawyers and lawmakers.

B. Translating Science for Legal Use

A difficulty inherent in any conversation between members of different disciplines is language. And the language that a particular discipline uses also encompasses an untold number of factors, including cultural assumptions, training, experience, and so forth. An interdisciplinary effort such as Law and Neuroscience thus confronts a nearly insurmountable challenge. Given that its

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15. The casebook, I might add, would also likely serve well an undergraduate class on the subject. The legal doctrine is not terribly complex and the challenges associated with employing neuroscience research in the law would be an excellent upper-division undergraduate class.
audience is primarily law students, it must introduce a subject that employs a language and methods—quantitative methods—that most lawyers do not know and cannot speak. In what might sound like a contradiction in terms, Jones, Schall, and Shen meet this challenge partly by confronting it head-on and partly by avoiding it altogether.

They confront the translational issues presented at the intersection of law and neuroscience head-on by providing an extraordinary primer on the biology of the brain and the tools scientists use to study that biology. Chapters seven through nine of the casebook are devoted to this subject and they ought to be required reading for any lawyer or lawmaker considering or confronting the use of neuroscientific evidence. These chapters are as clear, as detailed, and as well presented an introduction to the biology of the brain and the contemporary tools scientists use to study that biology as I have seen.

Nonetheless, though the primer is as user friendly an introduction to brain biology as is likely possible, the average law student will find it tough sledding. The challenge of the neuroscience lies in the complexity of the detail of brain structure. Indeed, the average law professor, even one with a solid science background (but without the neuroscience), will find this material daunting to teach. Figure 7.6, for example, maps the major gyri and sulci of the human cerebral cortex. Most law students are likely to react to this with the age-old question, “Will this material be on the final?” Indeed, this section of the casebook is the reason that most law students went to law school rather than medical school. Law schools, and thus the ranks of lawyers and judges, are filled with a large percentage of students with little background in science and little inclination to learn any.

Despite the likely trauma that the biology of the brain and its modern measurement technologies will likely inflict on the average law student, Jones, Schall, and Shen should be applauded for the level of sophistication they bring to the subject. Students who put in the effort will be richly rewarded. Still, I suspect that the average law professor will not expect their students to be able to distinguish a dendrite from an axon on the final exam. Indeed, I doubt that there is any real usefulness to their developing this capability. The real value of this section is ultimately cautionary. The brain is a hugely complex organ that scientists remain very far from understanding with confidence or in any detail. And this is especially so in regard to the applied mental states and psychological concepts that the law has historically identified as relevant.

In fact, and importantly, the authors also provide a detailed presentation of limits and cautions regarding, in particular, available measurement techniques and what can and cannot be gleaned from them. This section is invaluable for the law student, but would also provide an effective guide for lawyers and judges needing to manage this complex evidence.

At the same time, however, the authors also largely ignore another aspect of the challenges of language and methods inherent in employing neuroscience

16. Jones et al., supra note 4, at 209.
17. See id. at 203.
18. See generally id. at 245–66.
Faigman

in legal decision making. Whereas the authors fully confront the complex biology of the brain, they largely omit the statistics and myriad methodological issues that pervade research on the brain. Neuroscience, like all applied science, is intensely statistical and presents myriad issues regarding methodological choices ranging from defining the sample population to operationally defining the dependent measure.

I do not mean to criticize this editorial decision, only to note it. Indeed, the breadth and depth of statistical techniques applicable to brain research is well beyond what most law students could manage. However, some substantial nods in the direction of the inherently statistical nature of this applied science would likely have added to the value of the book. In particular, the book would have benefitted from inclusion of materials and discussion regarding the fit, or lack thereof, between how scientists operationally define their variables and how the law does so.

The law is concerned with a host of mental states on which neuroscience either already has, or might eventually have, something to offer. Just a small sampling of subjects include competency, intellectual disability, developmental maturity, lie detection, self-control, and mental illness. When scientists study such subjects they must operationally define the concept for purposes of measurement. For instance, intellectual disability for scientists is largely a combination of IQ score and measures of adaptive functioning. The law is also interested in intellectual disability, but potentially for purposes unrelated to the operational measures scientists use. For example, the Supreme Court’s decision that the Eighth Amendment prohibits executing an intellectually disabled defendant depends on the view that such individuals do not meet the requirements of deterrence and blameworthiness that are the twin pillars of punishment.19 But whether the tests scientists use to measure intellectual disability help answer the question of the defendant’s deterability or blameworthiness is a separate issue. It is a problem of translating the science into the law.

Inevitably, some of the materials Jones, Schall, and Shen use touch on the issue of how scientists operationalized their variables. The chapter on lie detection has more on this than most of the others.20 But largely this issue is ignored in favor of more general considerations surrounding the usefulness of the extant science of the brain. For example, chapter 17 on “Adolescent Brains” is one of the strongest chapters in the book, primarily because its subject has considerable research behind it and the courts have been amendable to citing that research. The chapter, however, offers little exploration into the details of the underlying research paradigms that, by necessity in neuroscience, are primarily laboratory-based. Given the overall robustness of this work, the topic would have given the authors a good opportunity to examine the experimental paradigms used to operationally define notions such as “developmental maturity” and consider whether they fit the legal purposes for which they have been offered. Other subjects in law and neuroscience have suffered criticisms

20. JONES ET AL., supra note 4, at 449 (ch. 15).
regarding their generalizability to actual cases—including lie detection\(^{21}\) and predictions of violence\(^{22}\)—which the adolescent work has largely escaped. This may be a consequence of many factors, such as the correspondence between the research results and what every parent already knows, or, more relevant for the present enterprise, the superiority of the research design used to study the adolescent brain.\(^{23}\) If the explanation is due at least partly to the latter factor, this is an important lesson not sufficiently explored in the book.

What ultimately seems to excite the lay public about neuroscience, and likely affects lawyers’ enthusiasm for the subject, is the apparent window it opens into the brain. Past, present, and future mental states, including insanity, competency to stand trial, or future dangerousness, all seem within neuroscience’s grasp. If we are our brains, as we assuredly are, then we ought to be able to bypass the lying, deceitful, confabulating, and malingering person and examine the source directly—the brain. Of course, the science is hardly so straightforward or advanced, as Jones, Schall, and Shen make abundantly clear. But their message is more important still, for even a clear window into the brain would not relieve the law of answering the tough normative questions inherent in the administration of justice.

II. A WINDOW INTO THE BRAIN?

Both the practicality and the romance of neuroimaging is, and has always been, that it opens a window into the brain. Of course, these pictures are largely constructions, attended by myriad working assumptions that belie the colorful brain images that regularly decorate the front cover of glossy magazines. Nonetheless, the array of imaging technologies available today permits us to see the structure and functioning of the brain like never before. In a variety of legal contexts, these windows into the brain are likely to be crucial.

One area that has been revolutionized by imaging technologies is death. Indeed, death and its immediate precursors are areas that historically have been fundamentally affected by advancing technologies, both in prolonging life and in determining when life has ended. George Washington was reputed

\(^{21}\) See United States v. Semrau, 693 F.3d 510, 522 (6th Cir. 2012) (“[T]here are concerns with not only whether fMRI lie detection of ‘real lies’ has been tested but whether it can be tested.”). See generally Henry T. Greely & Judy Illes, Neuroscience-Based Lie Detection: The Urgent Need for Regulation, 33 Am. J.L. & Med. 377, 403 (2007) (“It is likely to be difficult, and perhaps even impossible, to create good tests of real-world lies. This is a criticism of any attempt to apply this research to the real world without a great deal more work.”).

\(^{22}\) See, e.g., O. Carter Sneed, Neuroimaging and the “Complexity” of Capital Punishment, 82 N.Y.U. L. Rev. 1265, 1329 (2007) (“In a sentencing system that focused the jury's deliberation solely on the question of identifying and preventing crime, the work of the cognitive neuroscience project's architects would be transformed from a vehicle for seeking mercy into a tool that counsels the imposition of death.”).

\(^{23}\) Many additional factors beyond these two might explain the relative success of the adolescent work in neuroscience, ranging from the large corpus of preexisting behavioral science on the subject to the inherent sympathy accorded the subject population. A more prosaic explanation for the Supreme Court’s reliance on this research is that the Justices were predisposed to moving in this direction and the empirical research was employed to support results reached on normative grounds.
to have asked his aide not to have his body interred for at least three days after he was thought to have passed. But much of history, medical technology was too inexact to reliably mark the passage from this world to the next. Jones, Schall, and Shen’s chapter on death is sobering and illuminating. It illustrates how important the new technologies are in this context.

But even when advanced technologies indicate that a person has suffered “brain death,” the normative consequences of that determination are not dictated by the science, much less the images that are the product of that science. This lesson is illustrated by the highly publicized case of Jahi McMath. Jahi was thirteen years old when she suffered severe complications following a tonsillectomy, including bleeding from her nose and her mouth and, ultimately, cardiopulmonary arrest. Despite aggressive treatment, doctors determined that Jahi was dead by neurologic criteria. Her family, however, refused to accept this determination and pursued various legal actions to compel the hospital to maintain Jahi on “life” support. California Superior Court Judge Evilio Grillo, however, ruled that Jahi was dead under California law. Jahi’s family moved her to New Jersey, which does not use the criterion of neurological death when “such a declaration would violate the personal religious beliefs of the individual.” Hence, based on identical neurologic criteria, a person might be declared dead in California and alive and eligible for government supported treatment in New Jersey.

The stark lesson of Jahi McMath is also true, only more so, when it comes to the legal significance of other structural or functional aspects of the brain. For instance, a favorite case for thinking about the relevance of neuroscience to the law is that of the 40-year-old school teacher who, apparently, had led a normal life until he started acting inappropriately toward his stepdaughter and downloading pornography. Subsequent to his arrest, while he was awaiting trial, he experienced fainting spells. A subsequent examination, including im-

24. LETTERS AND RECOLLECTIONS OF GEORGE WASHINGTON: BEING LETTERS TO TOBIAS LEAR AND OTHERS BETWEEN 1790 AND 1799, SHOWING THE FIRST AMERICAN IN THE MANAGEMENT OF HIS ESTATE AND DOMESTIC AFFAIRS. WITH A DIARY OF WASHINGTON’S LAST DAYS, KEPT BY MR. LEAR 134 (Jared Sparks ed., London, Archibald & Co. 1906) (Shortly before he died, Washington told his secretary, Tobias Lear, “Have me decently buried; and do not let my body be put in the Vault in less than three days after I am dead.” (emphasis omitted)).
27. An EEG indicated no electrical activity. Id. at 1145.
28. Id. at 1146.
30. In New Jersey, when a family has personal religious objections to using neurologic criteria to determine death, the determination must be made “solely on the basis of cardiorespiratory criteria.” Id. It appears that Jahi is still being maintained on a ventilator and connected to feeding tubes two years after she was declared dead by a California court. See Melissa Chan, Jahi McMath, Declared Brain Dead Nearly 2 Years Ago, Turns 15 Amid Legal Battle: “She Is Still Alive and Just as Beautiful as Ever”, N.Y. DAILY NEWS (Oct. 27, 2015, 9:40 AM), http://www.nydailynews.com/news/national/jahi-mcmath-declared-brain-dead-celebrates-15th-birthday-article-1.2412767.
aging, revealed a golf ball-sized tumor near his prefrontal cortex. After surgery, he no longer felt compelled to molest his stepdaughter. Should he still be prosecuted? 31

The ultimate lesson of this case study is that while the tumor may explain his behavior, it does not necessarily excuse it. This is so for many reasons, which is why it is such an effective teaching tool. For instance, even if we accept that the tumor put the compulsion “into his head,” he still decided to act on it. Perhaps, however, the tumor affected his self-control as well; or, perhaps, a preexisting brain structure predisposed him to be unable to control his compulsions, and the object of them could have been gambling or young children. Indeed, although the tumor might explain the man’s overwhelming compulsion, presumably all those offenders who have acted similarly did so because of similar compulsions directed by their brains. Contemporary technology can image the schoolteacher’s brain and discover a tumor; presumably, technology one hundred years from now will be able to image the brain structures of sexual offenders who do not have tumors and identify the defects that make them behave the way they do. Why treat the sex offender with the tumor differently from the sex offender with the badly wired brain? We can see the former today with advanced imaging technologies, but we know that the latter is true too, even if we cannot yet see it.

It is perhaps ironic that the current perception of neuroscience in the law is one of arrogance. The popular press trumpets how neuroscience will provide a window into the mind, if not the soul, and that legal questions from intent to insanity will be revealed. Similarly, neuroscience has been heralded by some as the death of free will, a fundamental operating presumption of the law. Neuroscience is the study of the brain and the human behavior that is a function of the brain’s circuitry and operations. A fully mature brain science, it might be supposed, will render many of the due processes of the law irrelevant. If fMRI can provide the perfect lie detector, what need is there for juries, notwithstanding the Sixth and Seventh Amendments to the contrary? Preventive detention and civil commitment might be indicated for anyone exhibiting a violent brain, thus making policing prospective rather than retrospective. There is little humility in any of this.

Yet if there is one theme that is carried through every section and subsection of Law and Neuroscience, it is humility about the power of the science. Modern neuroscience, especially its gold-standard tool of fMRI, is only a couple of decades old and it remains far from an exact science. One abiding lesson of Law and Neuroscience echoes Winston Churchill’s cutting remark about Clement Attlee: “[A] modest man who has a good deal to be modest about.” 32


Thus, although Jones, Schall, and Shen clearly believe in the potential of neuroscience to help inform the law, they remain cautious in their approach and they assiduously present competing views regarding the promise and the perils of neuroscience for the law. A more balanced and sober view of the subject is hard to imagine.

Neuroscience, of course, does not stand alone in offering rigorously tested insights about human behavior of potential relevance to legal doctrine. It is, as Jones, Schall, and Shen repeatedly illustrate through the cases and materials they employ, a piece of the psychological puzzle. Topics such as eyewitness identification and adolescent development have long been the subjects of cognitive and behavioral scientists. Neuroscience has come onto the scene only recently and largely is confirming much of what was already known. But neuroscience has grabbed the headlines, and has garnered some measure of judicial attention. Thus, perhaps ironically, neuroscience might herald a new appreciation for the value of well-designed and rigorous social science research. If this occurs, neuroscience will be understood by lawyers as it is employed by scientists—as just one methodology among others by which to understand human behavior. In the end, although Law and Neuroscience is ostensibly about law and neuroscience, its major contributions might be to place neuroscience into the broader framework of the law’s use of science generally. If this occurs, it would indeed be paradigm-shifting stuff.