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Introduction to Philosophical Foundations of Law & Neuroscience

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Dennis Patterson & Michael S. Pardo

In recent years, the field of law and neuroscience—also known as "neurolaw"—has grown at an astonishing pace. A decade ago the field consisted of some intriguing and speculative possibilities, but neurolaw now constitutes a major focus of interdisciplinary research throughout the world.[1] Part of the explanation for this growth is the concomitant growth of the brain sciences themselves, and the emergence of new technologies to gather ever-more precise information about the brain.[2] Another part of this explanation is the fact that so much in the law depends on issues relating to the mind and mental states, the nature of human action and agency, and decision making. These issues are precisely the ones that neuroscience—particularly, cognitive neuroscience[3]—purports to illuminate in astonishing detail. In short, the rapid expansion of neurolaw follows from two claims: (1) neuroscience provides powerful new evidence about the brain, the mind, and human action; and (2) this evidence is relevant and highly probative for issues throughout the law. The first claim is undoubtedly true, although numerous conceptual and empirical issues within this domain—including what inferences may

[1] A brief history of the early development of neurolaw as a field is provided in Oliver R. Goodenough & Micaela Tucker, "Law and Cognitive Neuroscience," 6 *Ann. Rev. Law Soc. Sci*. 61, 63-65 (2010). An informative overview of the current state of the field (including publications, programmes, and conferences) may be found on the website of the MacArthur Foundation Research Network on Law and Neuroscience: www.lawneuro.org . See also Owen D. Jones et al., *Law & Neuroscience* (2014).

[2] For an excellent introduction, see *A Primer on Criminal Law and Neuroscience* (Stephen J. Morse & Adina L. Roskies, eds., 2013).

[3] Most neurolaw discussions involve the branch of neuroscience known as "cognitive neuroscience," which focuses on the relationships between neurological features and mental processes related to perception, memory, decision making, action, belief, and emotion. Michael S. Gazzaniga et al., *Cognitive Neuroscience: The Biology of the Mind* (2013). This branch overlaps to a large extent with cognitive psychology, among several other fields. The potential connections to law follow from the important roles that these mental processes play throughout the law.

be drawn from the evidence—are, like most fields, uncertain or highly contested.[4] The second claim provides the primary domain for the many promises and challenges of law and neuroscience. Debates about whether and how neuroscience may inform legal issues raise a host of empirical, practical, doctrinal, ethical, and theoretical issues. These debates animate the rapidly growing field of law and neuroscience, and they are a primary focus of the philosophical discussions in this volume.

The potential relevance of neuroscience touches virtually every conceivable issue within the law. This is not mere hyperbole. To the extent neuroscientific evidence reveals insights about the mind, decision making, and human behaviour, these insights may provide useful information for explaining, justifying, critiquing, or improving the law's efficacy and applications in any of its domains. Notwithstanding this broad potential reach, it is not surprising that much of the focus of neurolaw to date has been on criminal law. Mental states and the degree of control and voluntariness that attend to actions play significant roles in ascriptions of criminal responsibility. The perceived fit between these issues and neuroscientific investigations—along with the high stakes at issue in the criminal law—make this major focus on the part of neurolaw understandable. But many neurolaw issues generalize beyond or apply outside of criminal law; these issues involve, for example, other doctrinal areas such as torts, property, contracts, and intellectual property; general issues dealing with evidence and procedure; and theoretical issues pertaining to legal, moral, and economic decision making. The chapters in the book follow a similar trend, with several focusing in detail on issues within criminal law, but there are also discussions addressing other doctrinal areas, issues in evidence and procedure, and general theoretical issues pertaining to mind, decision making, and action.

[4] See, e.g., Ralph Adolphs, "The Unsolved Problems of Neuroscience," 19 *Trends Cog. Sci.* 173 (2015); R.A. Poldrack, "Can Cognitive Processes be Inferred from Neuroimaging Data?," 10 *Trends Cog. Sci.* 59 (2006).

Although neuroscience may inform issues throughout the law, exactly how it might do so varies depending on the issue. We think the following taxonomy provides a useful framework for categorizing the various claims and arguments about how neuroscience may apply to a legal issue: (1) proof, (2) doctrine, and (3) theory. In the first category (legal proof), the law identifies some fact as relevant to an existing legal category or the resolution of a legal dispute, and neuroscience (it is claimed) is relevant for resolving the question whether this fact obtains or not. In this category, for example, are issues such as whether a witness is lying or whether a criminal defendant acted voluntarily, with a culpable mental state, or satisfies the requisite criteria for an insanity defence in a particular jurisdiction. Importantly, neurolaw claims in this category are not about *changing the law*; they are about improving the application of already-established legal categories.[5]

The second category (legal doctrine) involves arguments about how neuroscientific information (it is claimed) is relevant for explaining, justifying, or, more often, critiquing and improving legal doctrine. Claims in this category are typically about *changing the law* by changing the criteria the law uses for resolving legal disputes and guiding behaviour. In this category, for example, are issues about the criteria used for ascribing criminal responsibility[6], how to characterize compensable injuries in tort law (for example, mental injuries or chronic pain), and how certain constitutional rights should be applied (for example, the Fifth Amendment privilege against self-incrimination). Neurolaw claims in this category typically proceed by

[5] The claims are thus similar to those made with regard to DNA evidence and criminal convictions. The development of DNA technologies has had a transformative effect on the criminal law by improving the reliability by which its existing categories are applied. Some advocates claim that one way in which neuroscience may have a positive effect on the law is by providing it with more reliable evidence than currently exists.

[6] Arguments aimed at the criteria for criminal responsibility may focus on the category as a whole (for example, by claiming that all ascriptions are based on faulty criteria) or by focusing on the criteria for a particular issue such as *mens rea*, voluntary action, or insanity.

arguing that current legal doctrine relies on assumptions or premises that neuroscience reveals as mistaken or faulty.

The third category (legal theory) involves arguments about how neuroscience (it is claimed) contributes to highly abstract theoretical issues with implications for law. Some of these issues include: free will, action, mind, knowledge, intent, morality, economic decision making, legal reasoning, and theories of criminal punishment. As with the second category, neurolaw claims in this third category typically proceed by arguing that neuroscience is relevant for proving or undermining a key premise or assumption at issue in theoretical debates in these areas.

Although we think this taxonomy is useful for clarifying the different ways in which neuroscience might inform the law, we note two complexities. First, the issues within these categories often interact with issues in other categories in complicated and unforeseen ways. For example, the desirability of a doctrinal category will depend, in part, on the availability of evidence on the issues, the ease or difficulty with which it may be proven, and the reliability of decision-makers to assess the evidence and apply the categories. Or, for another example, one's views about the legitimacy of and justifications for legal punishment will influence one's views about the doctrinal categories used to ascribe criminal responsibility (and perhaps also the evidence that is used for such purposes). Second, many neurolaw discussions reflect these complex interactions. Some neurolaw arguments fall neatly into the categories of proof, doctrine, or theory, but others involve issues at all three levels and the interactions among them.

The varied and complex interactions between law and neuroscience require careful attention from those on both the science and law sides. The title of this volume suggests an obvious question, nevertheless: what role(s) should *philosophy* play in these interactions? We

suggest that the answer to this question may not be obvious. It might be thought, for instance, that of the three-part taxonomy we outlined above (proof, doctrine, and theory), philosophy has a role to play only with regard to issues in the third category. In other words—so the thought would go—philosophical reflections will be relevant only when neuroscience is being used in debates over extant philosophical theories with potential implications for law (such as theoretical debates about free will, criminal punishment, or morality). Such a view, we contend, is mistaken. Philosophy is indeed relevant for such theoretical issues—but it is also relevant and has important roles to play at the levels of proof and doctrine, as well as with issues relating to the interactions among these levels. The chapters in this volume demonstrate the valuable roles that philosophy can play for issues at all three levels. The issues discussed from a philosophical perspective involve (1) theoretical issues about the nature of mind, free will, morality, rationality, knowledge, consciousness, emotions, action, criminal punishment, and legal reasoning, among others; (2) doctrinal issues about *mens rea*, insanity, volitional control, negligence, tort injuries, and the privilege against self-incrimination, among others, and (3) evidentiary proof issues pertaining to lies and lie detection, scientific expert testimony, mind reading and proving mental states, and mitigating evidence in criminal sentencing, among others. Some of the chapters focus on issues in one of these categories; others draw on issues from different categories and their interactions. As a whole, these chapters well illustrate the important conceptual issues that arise for neurolaw at the levels of proof, doctrine, and theory, and they demonstrate the practical significance for law that careful philosophical attention to these issues can provide.

We now turn to the chapters that comprise this book.

Neurolaw has many points of intersection with philosophy. The first obvious point of contact is philosophy of mind. Is the mind reducible to the brain? If it is, then what is the status of mental states? Are they epiphenomenal or does supervenience preserve a role for the mental? The relationship of mind to brain ramifies in several areas of law. Neurolaw also intersects with the topic of free will. If we live in a world where everything is caused, and materialism is the proper approach to mind and mental states, then perhaps we need to rethink the way we conceptualize responsibility. Adam Kolber ("Free Will as a Matter of Law") confronts this issue directly, rejecting one of the leading views of the relationship between free will and legal responsibility on the ground that the current system of legal responsibility likely emerged from outdated views about the mind, mental states, and free will. .

Stephen Morse ("The Inevitable Mind in the Age of Neuroscience") argues that free will is not a presupposition of the criminal law, or any other area of law, and thus causal determinism about mental states and actions (whether illuminated by neuroscience or not) does not undermine legal responsibility. Hence, people who question whether there can be free will in a causal world are simply making a mistake. Morse, in other words, defends a "compatibilist" position for law (in which free will and causal determinism can coexist) and he argues that legal responsibility depends on the degree to which we are responsive to reasons. For these reasons, he concludes that neuroscience does not pose any global challenges to legal responsibility and is unlikely to undermine the law's conceptions of mind, mental states, and action any time soon.

Kolber, rather than directly endorsing a version of incompatibilism (in which causal determinism undermines both free will and legal responsibility) or directly rejecting the coherence of Morse's compatibilism, seeks to reframe the question. Kolber argues that those who initially developed the criminal law did not have anything like Morse's compatibilist

reconstruction in mind but rather endorsed or presupposed views about mind (e.g., substance dualism) and free will (e.g., freedom from all causal constraints) that modern neuroscience will aid in revealing as false. Kolber then argues for the relevance of these false presuppositions embedded in the original development of the criminal law in judging whether to revise or maintain the current system. In arguing for the relevance of such presuppositions, Kolber shares the view that neuroscientific developments will change the way we think about criminal responsibility. A related view was initially advanced in a much-discussed article by Joshua Greene and Jonathan Cohen.[7] It is a position that is now widely held or one to which many people are at least open. Kolber maintains that if the criminal law arose and developed because of false presuppositions about mind and free will, then the criminal law stands in need of wholesale revision. Morse demurs, arguing that those advocating for wholesale revisions in the law's folk psychological system for ascribing responsibility have yet to deliver concrete results. The debate remains open.

What does neuroscience tell us about human freedom? Similar to Kolber, Nita Farahany ("A Neurological Foundation for Freedom") also seeks to reframe the neurolaw discussions involving free will, mind, and action. Specifically, Farahany wants to shift from traditional debates regarding determinism to the question of whether freedom of action (i.e., the ability to bring about an intended action) is a sufficient ground for responsibility. Farahany confronts both the reductionist tendencies of many scholars who see neuroscience as displacing our "folk psychological" vocabularies and what she describes as Stephen Morse's "consequentialist justification" of the criminal law. Farahany defends freedom of action as sufficient for legal responsibility and argues that neuroscience (with the aid of technologies such as brain-machine

[7] *See* Joshua Greene & Jonathan Cohen, "For the Law, Neuroscience Changes Nothing and Everything," 359 *Phil. Transactions Royal Soc'y London B* 1775 (2004).

interface) will demonstrate that freedom of action exists and will help to reveal its nature and its limits.

Deborah Denno ("The Place for Neuroscience in Criminal Law ") also believes that advances in neuroscience will have far-reaching effects on the criminal law. Culpability is central to judgments of responsibility. Because culpability depends on an individual's mental states, Denno argues that neuroscientific advances will necessarily motivate wide-ranging changes to assessments of culpability and, as a consequence, significantly alter the law's conception of responsibility for action. In her contribution to this volume, Denno calls for a new theory of mental states, one that is rooted in brain science, to replace the "outmoded psychology of mental states" on which the current criminal-justice system is based. Denno also cautions against the scepticism some courts and commentators have shown towards neuroscientific evidence, arguing that it should be treated like other types of scientific evidence.

Frederick Schauer ("Lie Detection, Neuroscience, and the Law of Evidence") also questions some of the scepticism shown towards neuroscientific evidence. Schauer focuses on the example of neuroscience-based lie detection from the perspective of the policies and epistemic norms underlying the law of evidence and legal proof. Schauer makes the case that in some instances neuroscientific evidence is superior to forms of evidence (scientific and non-scientific) routinely admitted in legal proceedings. In analysing whether neuroscientific evidence should be admitted or excluded in legal proceedings, Schauer asks the important question: "compared to what"? Excluding neuroscientific evidence in order to base decisions on evidence that may be more epistemically problematic (e.g., eyewitness identifications, bite-mark and handwriting analyses, and so on) appears to run afoul of the law's evidentiary principles and goals. In making his case, Schauer also emphasizes the extent to which the epistemic norms and

standards at issue involve fundamentally *legal* and not just *scientific* questions (e.g, about how the risk of error should be allocated).

The interface between law and neuroscience is shot through with big philosophical questions. We have already canvassed the views of several contributors on the question whether the law presupposes free will. A similarly large topic is the theory of mind presupposed by the law. Rene Descartes proffered the view that the mind is an incorporeal substance connected to the body by the pineal gland. This "substance dualism" or "Cartesian" theory of mind is nearly universally rejected as a proper account of mental life. Yet, as Dov Fox and Alex Stein ("Dualism and Doctrine") argue, remnants of this theory of mind remain entrenched in legal doctrine in torts, criminal law, and constitutional criminal procedure. In their contribution, Fox and Stein make the case that neuroscience reveals that dualism is both conceptually bankrupt and empirically flawed. As other contributors argue, advances in neuroscience are putting pressure (or worse) on existing legal doctrines in ways that will force much-needed change. Fox and Stein provide an alternate account of human action, one that avoids the errors of dualism without compromising the law's goals in these areas, and they suggest changes to correct the doctrine accordingly.

Gideon Yaffe ("Mind-Reading by Brain-Reading and Criminal Responsibility") explores whether neuroscience can provide "mind reading" evidence that may be useful for legal proceedings. After exploring different conceptions of "mind reading," he argues that neuroscience may indeed provide a type of epistemically robust evidence of mental states that differs in kind from the usual behavioural, psychological, and cultural evidence used to infer mental states. According to Yaffe, neuroscientists may discover how a mental state is "realized" in the brain, and, therefore, evidence of whether the "realizer" is present or absent will provide

evidence of whether a mental state is present, without reliance on the other forms of behavioural, psychological, or cultural evidence that might be used to infer mental states. After outlining this possibility of "mind reading," Yaffe goes on, however, to discuss several important limitations on such evidence, arguing that it could not be used to infer past mental states, future mental states, or capabilities regarding mental states. He concludes by noting one area where such "mind reading" evidence could be particularly probative in law: inferring the mental states of those with a variety of disorders for whom other types of evidence (e.g., behaviour) may be an unreliable guide.

Consciousness has been a big topic in philosophy of mind as well as in law and neuroscience. In her contribution to this volume, Katrina Sifferd ("Unconscious *Mens Rea*: Lapses, Negligence, and Criminal Responsibility") considers arguments by Neil Levy for the proposition that direct conscious awareness is a prerequisite for responsibility. Sifferd rejects this view, arguing that it is rooted in a defective conception of the self. Sifferd situates her views within a diachronic conception of the self. Negligence law provides a good example. We hold tortfeasors liable not only for what they were directly aware of, but what they should have been aware of. Forgetting your child locked in a hot car or forgetting to latch the gate that keeps your aggressive dog at bay are just two ordinary examples where the law locates responsibility for action of which we are not directly aware. Sifferd argues that the puzzle over responsibility is nested in a larger debate about the nature of the self that we (and the law) hold responsible.

As we have explained, many "big ideas" permeate discussions of law and neuroscience. In his contribution, Michael Moore ("The Neuroscience of Volitional Excuse") brings together many big philosophical topics involving the mind, free will, action, morality, causation, and metaphysics in discussing the topic of volitional excuse. Ranging across psychology,

philosophy, and neuroscience, Moore argues that the primary way to think about volitional excuses is in terms of counterfactual analyses. There is no simple move from neuroscience to a judgment about volitional excuse. Working through the possible counterfactuals in any given case cannot be avoided simply by focusing on neuroscientific data. The process is shot through with judgments about the degree to which the agent in question "could have done otherwise." Scientific discoveries from neuroscience, he contends, will not preclude the counterfactual inquiry and the difficult philosophical work it entails. Moore sees a role for neuroscience, of course. But it is limited and, as yet, underdeveloped.

When scholars raise questions about extravagant claims regarding the power of neuroscience to change the way we think about law, they open themselves up to being labelled as "sceptics." Your editors have attracted this characterization, and our contribution to this volume ("The Promise of Neuroscience for Law: 'Overclaiming' in Jurisprudence, Morality, and Economics") will only reinforce this view.[8] We consider the claims made on behalf of neuroscience in three areas: legal philosophy, emotion and moral judgment, and economics. We argue that reductionist claims made for the explanatory power of neuroscience are simply not demonstrated in these areas. Neuroscience, at least so far, tells us nothing of import in the area of legal philosophy. With respect to moral judgments, there are many interesting claims made about the roles of emotion, but we are not convinced that neuroscientific data about the brain provides answers to the difficult normative questions. Finally, even if neuroscience can tell us where in the brain one finds the neural correlates of economic decisions, we question whether this information answers any normative questions about rationality or economic reasoning.

[8] Of course, "sceptic" is just a label and whether it fits depends on what one means by it. We maintain that we are not sceptics, if this is meant to apply to one who denies that neuroscience has anything of value to contribute to law. Rather, we take issue with what appear to us to be examples of either overclaiming or conceptually problematic arguments based on applications of neuroscience to law.

The chapters in this volume are state-of-the-art works in a field that is rapidly growing. The synthesis of philosophy, psychology, and neuroscience produces a rich palette of argumentative and explanatory possibilities for law. We are confident that the arguments and positions developed here will sustain debate and spur further inquiry.