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### Symposium on Minds, Brains, and Law: A Reply

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THE UNIVERSITY OF  
**ALABAMA**  
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**Symposium on *Minds, Brains and Law: A Reply***

Michael S. Pardo  
Dennis Patterson

JURISPRUDENCE  
*Forthcoming 2015*



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## Symposium on *Minds, Brains, and Law*: A Reply

Michael S. Pardo\* & Dennis Patterson\*\*

We would like to thank the editors of this journal, and in particular Veronica Rodriguez-Blanco, for organizing this symposium on our book.<sup>1</sup> Of course, it is a great honor for us to attract the attention of such a distinguished group of legal academics to engage us on the intersection between law and neuroscience. We are immensely grateful for the opportunity to discuss our ideas and to respond to the critiques advanced by Stephen Morse, Teneille Brown, and David Faigman.

Our book presents philosophical and legal analysis of the relationship between neuroscience and law. We discuss a variety of issues in the areas of legal theory, legal doctrine, and legal proof and how they interact with extant (or promised) neuroscientific evidence. These issues are distinct and complex, each raising different challenges. One theme running through our analysis is the significance and practical importance of attending to conceptual, as well as empirical, issues. We continue to emphasize this theme in this reply.

We will address each review individually. Morse and Brown are largely in agreement with many aspects of our arguments. But they each raise challenges with respect to some of the details. We first discuss the extensions, amendments, and objections they each

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<sup>1</sup> Michael S. Pardo & Dennis Patterson, *Minds, Brains, and Law: The Conceptual Foundations of Law and Neuroscience* (Oxford University Press, 2013).

have raised. Faigman takes a more critical stance. Accordingly, we devote the bulk of our reply to correcting several misunderstandings and misinterpretations that underlie his critique.

## I. MORSE

Stephen Morse identifies one of the central problems with the claim that advances in neuroscience will provide a complete understanding of mind and brain. Morse makes the point in characteristically perspicuous prose: ‘we still do not know how the brain enables the mind and action.’<sup>2</sup> This is important because without such knowledge, it is truly difficult to see how the exuberance many feel over developments in neuroscience will translate into useable information that can improve the law. We are not skeptical about science. Rather, we have not yet seen arguments that, as Morse puts it, are more than ‘correlational and coarse rather than causal and fine-grained.’<sup>3</sup>

Morse focuses his attention on the criminal law discussions in our book. As he correctly notes, many believe that three doctrinal subparts of criminal law doctrine are ripe for rethinking in light of developments in neuroscience.<sup>4</sup> These are the act doctrine, mens rea, and the defense of insanity. With respect to the act requirement, Morse notes that there are two schools of thought on so-called ‘actish’ cases, those where consciousness is inhibited. We take the majority view while Morse favors treating cases like the sleepwalking axe murderer as goal-directed and, to some degree, ‘in control’ of

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<sup>2</sup> Stephen J. Morse, ‘Review of Michael S. Pardo & Dennis Patterson, *Minds, Brains, and Law*,’ at 1.

<sup>3</sup> *Ibid*

<sup>4</sup> *Ibid*, 2.

her actions.<sup>5</sup> As Morse says, everyone agrees on the phenomenology of these cases. He also agrees that neuroscience will not answer the normative question whether to ascribe criminal responsibility in such cases.<sup>6</sup>

In our book, we argue that the conceptual issues involved in the interface between neuroscience and law are important and largely ignored. Morse agrees with us but he has some reservations about how we characterize the relationship between mental states and brain states. As Morse details, although he agrees with our non-identity claim, he does not like two of the examples we employ to illustrate our claim.<sup>7</sup> The examples were intended to illustrate that mental states are subject to normative standards but that brain states are not.<sup>8</sup> Morse suggests that a better, related conceptual strategy for demonstrating non-identity is to argue that brain states ‘do not have logic.’<sup>9</sup> Brain states are ‘subject to the causal laws of the physical world,’ but the physical world ‘is not logical or illogical.’<sup>10</sup> By contrast, ‘logic is a property of thought.’<sup>11</sup> We agree and we take this as a friendly amendment to our position.

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<sup>5</sup> *Ibid*, 2-3.

<sup>6</sup> To the ‘alien limb’ and ‘utilization’ cases, Morse adds Tourette’s syndrome. We agree that it belongs in the discussion of these neurological anomalies. Like Morse, we agree that ‘most such conditions create no criminal justice issues.’ *Ibid*. Whatever contribution neuroscience will make to our understanding of these conditions, there is not likely to be much payoff for the criminal law.

<sup>7</sup> *Ibid*, 3-4.

<sup>8</sup> Similar to Moore’s paradox (‘X is true, but I don’t believe X’), the examples were designed to show that the absurdity that may arise from the conjunction of contradictory mental states is not present with the conjunction of a brain state and a mental state (or two brain states).

<sup>9</sup> *Ibid*, 3.

<sup>10</sup> *Ibid*

<sup>11</sup> *Ibid*

Morse next invites us to reconsider our position on the relationship between the brain, mental states, and action. He states that ‘actions speak louder than images.’<sup>12</sup> We agree wholeheartedly. In fact, throughout our book, we make this point when discussing knowledge,<sup>13</sup> neuro-reductionism,<sup>14</sup> and perception and belief.<sup>15</sup> We could not agree more with Morse on this point.

Finally, we agree with Morse that neuroscience is likely to make some positive contributions to the criminal justice process. Statistical correlations between brain states and behavior are useful and they may be probative: we do not suggest otherwise. As Morse has cautioned for years, those suffering from ‘brain overclaim syndrome’<sup>16</sup> would do well to restrain their predictions and see where the evidence and the science takes us.

## II. BROWN

Teneille Brown focuses on the significance of conceptual issues for law and neuroscience.<sup>17</sup> She agrees with us (and with Morse) that the conceptual issues are both important and not given sufficient attention in the literature. In her review, Brown does not directly dispute our positions on the conceptual issues.<sup>18</sup> But she does question

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<sup>12</sup> *Ibid*, 4.

<sup>13</sup> Pardo & Patterson (n 1) 18-20.

<sup>14</sup> *Ibid*, 28-29.

<sup>15</sup> *Ibid*, 9-12, 23-25, 30-35.

<sup>16</sup> Morse (n 2) 1.

<sup>17</sup> Teneille R. Brown, ‘Law, Neuroscience, and Conceptual Housecleaning: a review of *Minds, Brains, and Law* by Michael Pardo and Dennis Patterson’.

<sup>18</sup> In addition to her discussion of mental states, Brown’s review also discusses (and largely endorses) our discussion of emotion and moral judgment. Accordingly, we will focus our reply on the challenges she raises regarding mental states.

whether recent developments in neuroimaging methodologies may poses challenges for our conceptions of mind and mental states. Brown suggests that recent experiments employing ‘multivariate brain pattern classification’ to study mental states ‘may be providing more empirical fuel to the conceptual fire.’<sup>19</sup>

The studies Brown cites measure ‘how distributed patterns emerge across the entire brain.’<sup>20</sup> By measuring such patterns, researchers are able to ‘decode’ (or predict above chance) ‘something very close to mental states.’ For example, researchers may be able to predict whether a subject has seen an image before or is engaged in another mental task (such as adding or subtracting), in some cases without any report from the subject. Brown asserts that our ‘very concept of mind is challenged by such studies’<sup>21</sup> and, in particular, our conception of knowledge is potentially undermined.<sup>22</sup> We do not think these studies challenge our claims. We have three points to make in response.

First, we agree that pattern classifiers may have forensic applications based on correlations between brain patterns and mental states. As we mentioned above, we do not dispute that neuroscientific evidence may provide probative evidence on factual issues that matter for law, including mental states. Although we agree with Brown about the

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<sup>19</sup> *Ibid*, 3. See J.R. King and S. Dehaene, ‘Characterizing the dynamics of mental representations,’ (2014) 18 *Trends in Cognitive Sciences* 203.

<sup>20</sup> *Ibid*, 4.

<sup>21</sup> *Ibid*, 5.

<sup>22</sup> *Ibid*, 4 (‘given the definition of “knowing” that is advanced by the authors, these facial memory tasks do not demonstrate neural evidence of “knowing,” which to them will typically require some performance capacity.’)

potential practical significance of such evidence, we disagree with some of the characterizations of such evidence.<sup>23</sup> This takes us to our second and third points.

Second, rather than challenge our conceptions, the studies (and Brown's characterizations) presuppose them. The clearest example is the important work of Adrian Owen et al.<sup>24</sup>, which Brown discusses for the possibility that 'pattern classifiers could also decode one's answers to a series of yes/ no questions, without relying on any observable behavior.'<sup>25</sup> The mental activity of patients discussed in the article, however, constitute 'answers' to questions only if the patients are in fact engaged in 'some performance capacity' in responding to the content of the questions.<sup>26</sup> Without this assumption, they are not *answering*; with this assumption, however, they are expressing

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<sup>23</sup> To the extent 'decoding' simply means predicting mental states based on brain patterns, as it typically does in many of the pattern-classifier studies, we take no issue with the characterization. We do, however, find the notions of neural 'storage' of semantic representations and neural 'encoding' of such representations to be conceptually problematic. See M.R. Bennett & P.M.S. Hacker, *Philosophical Foundations of Neuroscience* (Wiley-Blackwell, 2003): 164-71; Lila Davachi, 'Encoding: The Proof is Still Required' in Henry L. Roediger et al. (eds), *Science of Memory: Concepts* (Oxford University Press, 2007). One may endorse the theses that brain patterns play a necessary causal role in producing mental states, and may be used to reliably predict such states, without invoking tendentious metaphysical theses about storage and encoding.

<sup>24</sup> See Adrian Owen & Martin R. Coleman, 'Functional Neuroimaging of the Vegetative States' (2008) 9 *Nature Reviews Neuroscience* 235. We agree wholeheartedly with Brown about the potential legal significance of this work, for exactly the reasons she notes.

<sup>25</sup> Brown (n 17) 4-5. In the paper Brown cites, a woman who met the criteria for being in a vegetative state was able to communicate using brain activity. Researchers measured brain activity while asking her to imagine playing tennis and also while asking her to imagine walking through her home. She was then able to answer the yes/ no questions by either thinking of playing tennis or walking through her home, with one signifying 'yes' and the other 'no'.

<sup>26</sup> Owen & Coleman (n 24) 238 ('the patient retained the ability to understand spoken commands and respond to them through her brain activity, confirming beyond any doubt that she was consciously aware of herself and her surrounding.')



their beliefs, wishes, desires, and knowledge. Although this is not conventionally how knowledge is manifested, it is still an expression of knowledge and other mental states.<sup>27</sup>

Third, Brown wonders why our conception of knowledge focuses on skills and capacities of people and does not include the sub-personal mechanisms that underlie these skills and capacities.<sup>28</sup> For example, if brain pattern classifiers can ‘decode’ information (e.g., the shape of a barn) that is expressed by a proposition that someone *knows* (e.g., that there is a barn down the road), why not count the brain pattern as knowledge? We reject this proposal because it confuses necessary and sufficient conditions. Even if a brain pattern correlates with a true belief, it may or may not constitute knowledge, depending on a host of conditions external to the brain and the person.<sup>29</sup> If a person can have the same brain pattern in two different environments, and in one case she has knowledge and in the other she does not, then *a fortiori* the brain pattern is not knowledge. To answer Brown’s question, the reason we do not call such sub-personal mechanisms ‘knowing’ is because they are not. We do not take issue with the possibility that advances in empirical knowledge may cause us to revise our concepts. It is entirely possible, for example, that brain classifiers may cause us to revise how we conceptualize some mental states. But the extant studies are consistent with our current conceptions and the analysis in our book.

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<sup>27</sup> The other studies to which Brown refers also presuppose our conceptions to the extent they are attempting to identify brain patterns that correlate with mental activity. Successful manifestations of the relevant mental categories (e.g., remembering or recognizing) provide the targets for brain classifiers.

<sup>28</sup> Brown (n 17) 4 (‘On the spectrum of performing psychological attributes, why parse out a few skills or capacities at the very end of the spectrum and focus on those?’)

<sup>29</sup> See Alvin I. Goldman, ‘Discrimination and Perceptual Knowledge’ (1976) 73 *Journal of Philosophy* 771.

### III. FAIGMAN

Our book explored the rapidly evolving field of neurolaw and discussed a variety of theoretical, doctrinal, and practical issues. In his review, David Faigman focuses on one slice of that picture (namely, proof of factual issues at trial) and presents a sanguine account of the relationship between law and neuroscience. Although he appears to agree with us about the importance of conceptual issues—and in distinguishing between conceptual and empirical issues<sup>30</sup>—Faigman sees no need either for the work in our book or apparently any other philosophical work on the intersection of law and neuroscience.<sup>31</sup> Why no need? Because everything is fine ‘on the ground’: the scientists and lawyers have everything under control.<sup>32</sup>

Although scientists and lawyers have different perspectives and sometimes have trouble comprehending one another, he suggests, they each have methodological tools to properly manage to science/law interface. On the science side, researchers employ ‘operational analysis’ to ensure they define their concepts in a clear manner so that the research can be carried out with observable variables, understood by others, and potentially replicable.<sup>33</sup> Operational analysis also connects that research to areas of legal

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<sup>30</sup> He asserts, for example, that a ‘basic and categorical distinction’ between conceptual and empirical questions is ‘essential’ and ‘axiomatic.’ David L. Faigman, ‘Science and Law 101: Bringing Clarity to Pardo and Patterson’s Confused Conception of the Conceptual Confusion in Law and Neuroscience’ 3.

<sup>31</sup> ‘They [Pardo and Patterson] adopt the standpoint of philosophy . . . Unfortunately this leads them to examine the terrain where law and science meet from around 40,000 feet. That distance gives them a broad and encompassing perspective, but it does not permit them to say very much about what is, or should be, happening on the ground.’ *Ibid*, 1.

<sup>32</sup> *Ibid*, 2 (‘much of the conceptual confusion that Pardo and Patterson see from the stratosphere disappears when the analysis return to Earth.’)

<sup>33</sup> Operational analysis consists in evaluating the factual references of the defined terms in research. *Ibid*, 5 (‘Operational definitions operate as the links between the conceptual terms of our scientific language and the data of our experience.’)

concern.<sup>34</sup> On the other side of the fence, lawyers examine the ‘empirical fit’ between expert testimony on neuroscientific research and the factual questions that matter for law.<sup>35</sup> In other words, is the evidence relevant to an extant legal category, and, given the research methods and results, how probative is the research in proving a disputed fact that matters for the law? Faigman contends that proper attention to these issues alleviates conceptual problems ‘on the ground’ and, therefore, eliminates any need for philosophy to offer its perspective from ‘40,000 feet.’<sup>36</sup> He attempts to illustrate these claims with one example that we discussed in our book (fMRI lie detection) and with brief remarks on other examples we did not discuss.

We agree with basic features of Professor Faigman’s account. Of course, we take no issue with the significance of ‘operational definitions’ for scientific research (or operational analysis thereof). Nor do we take issue with the importance of ‘empirical fit’ when assessing scientific expert testimony. We see our project, and a role for philosophy more generally, as continuous with these important endeavors, not as a rejection or critique of them (as we explain below). Our concerns with Professor Faigman’s discussion, and there are several, lie elsewhere. First, he mischaracterizes the scope of our project and the conceptual issues we explored. Second, even in the part of his discussion that does map onto our analysis (regarding fMRI lie detection), he misstates the nature of our critique, the conceptual issues involved, and their practical significance. Third, he fails to appreciate the significance of the conceptual issues for neurolaw more

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<sup>34</sup> *Ibid* (‘scientific findings could not be translated for policy uses without operational analysis.’)

<sup>35</sup> This issue concerns whether the ‘the expert’s opinion generalizes to the legal issues in dispute.’ *Ibid*, 7.

<sup>36</sup> *Ibid*, 12 (‘As regards the principal assertion of the book, that there is considerable confusion between the conceptual and the empirical, this does not seem to be the case.’)

generally. Fourth, he misunderstands philosophy and fails to grasp how it may contribute to these issues. We discuss each of these four topics in turn.

*A. The Scope of our Project*

Faigman's account of 'operational analysis' plus 'empirical fit' applies most closely to expert testimony on factual issues at trial. Faigman presents our book as focused essentially on the use of neuroscience for this purpose.<sup>37</sup> We do indeed discuss issues of legal proof (including a chapter on fMRI lie detection), but other chapters in the book focus on a variety of theoretical and doctrinal issues that do not fit well within Faigman's framework. His account fits most closely with issues of legal proof because these issues involve a target legal category and an empirical question of whether the neuroscientific research truly informs factual disputes relevant to that category.<sup>38</sup> His account, however, does not encompass the many other theoretical and doctrinal issues we discuss in the book. Some of these issues include, for example, the relationship between free will and legal responsibility, the nature of rule-following, jurisprudential disputes about the nature of law, morality, economics, justifications for criminal punishment, the voluntariness requirement in criminal law, and the scope of the privilege against self-incrimination. With each of these issues, the conceptual issues arise not primarily in the context of proving disputed facts at trial but rather in the context of philosophical arguments, claims, and presuppositions. Operational analysis and empirical fit are still *relevant* to aspects of these issues, to be sure, but, because the neuroscientific research is being put in

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<sup>37</sup> 'Pardo and Patterson's focus on the empirical/ conceptual divide essentially raises questions of empirical fit.' *Ibid*, 7.

<sup>38</sup> Although even in the context of legal proof, there is more to the conceptual issues, as we explain in the next section.

the service of what are essentially philosophical claims, there is still plenty of room for philosophical work to be done.<sup>39</sup>

### *B. fMRI Lie Detection*

Faigman devotes the bulk of his commentary to discussing fMRI lie detection. We were quite clear in our analysis that we were not taking issue with the possibility that fMRI may provide probative evidence of whether someone is lying. On this point, Faigman quotes us: ‘if certain neurological events could be shown to be empirically well-correlated with lying, then neuroscientific evidence may be probative in determining whether a witness is lying.’<sup>40</sup> He then asserts that most contemporary neuroscience findings sought to be applied to legal issues fit this paradigm, including lie detection.<sup>41</sup> As he explains, the ‘neuroscience research on lie detection is aimed at identifying “neurological events [that] could be shown to be empirically well-correlated with lying.”’<sup>42</sup> ‘So,’ Faigman asks, ‘what’s the problem?’<sup>43</sup> Noting that the evidence is

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<sup>39</sup> Faigman mischaracterizes the scope of our book in another way as well. He suggests our philosophical claims about the mind exhaust the analysis: ‘Professors Michael Pardo and Dennis Patterson examine the law and science boundary for neither side of this fence.’ *Ibid.* In fact, much of the book presents detailed legal analysis of the practical legal issues, building on the conceptual, philosophical discussions. See, in particular, chapters Four (Lie Detection), Five (Criminal Law), and Six (Criminal Procedure). As other reviewers have noticed. See Alexander Guerrero, ‘Reviewing *Minds, Brains, and Law*’ (7 May 2014) *Notre Dame Philosophical Reviews*, <http://ndpr.nd.edu/news/48119-minds-brains-and-law-the-conceptual-foundations-of-law-and-neuroscience/> (‘there are complex criminal procedure issues that Pardo and Patterson discuss quite expertly in Chapter Six. (The discussion of the Fourth and Fifth Amendment constitutional issues regarding the compelled production and use of neuroscientific evidence against criminal defendants is worth the price of admission in its own right.’); Gerben Maynen, ‘Neurolaw: Neuroscience, Ethics, and Law’ (2014) 17 *Ethical Theory and Moral Practice* 819 (‘Although both Pardo and Patterson are legal scholars, they make explicit that “[f]irst and foremost, this book is a philosophical project” . . . Nevertheless, there is ample detailed legal analysis in this book.’).

<sup>40</sup> Faigman (n 30) 3 (quoting Pardo & Patterson (n 1) 45).

<sup>41</sup> ‘Most contemporary neuroscience findings that are sought to be applied to legal issues, from developmental maturity to lie detection, seem to fit this “positive use” for neuroscience.’ Faigman (n 30) 3. We take no issue in the book with other examples he mentions, including issues of developmental neuroscience, psychopathy, or competency.

<sup>42</sup> *Ibid.*, 3.

‘knocking on the courtroom door,’ he claims that (1) the conceptual problems we identify are nonexistent<sup>44</sup>; (2) instances of what appear to be conceptual errors are at most the results of ‘errors of phrasing’ or ‘hyperbole’ from a few scholars (not ‘influential scholars in the field’) and not systematic problems<sup>45</sup>; and (3) there is no evidence these conceptual issues have affected, or will affect, matters in the courtroom.<sup>46</sup> Each of these three claims is false, as we will now demonstrate.

First, Faigman misrepresents our discussion of the conceptual issues raised by fMRI. They are more varied than he indicates. He correctly notes that one conceptual issue we discuss in the book is the ‘mereological fallacy,’ and we note a few instances of it in the lie detection context.<sup>47</sup> But that issue was not the exclusive—nor even the primary—conceptual issue that we discussed in our chapter on fMRI lie detection, as Faigman suggests.<sup>48</sup> Indeed, the mereological fallacy is one of six distinct conceptual issues we

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<sup>43</sup> *Ibid*

<sup>44</sup> ‘There is much to be concerned about this technology, but it is not that anyone has seriously confused, or is likely to confuse, the empirical with the conceptual.’ *Ibid*, 8.

<sup>45</sup> ‘the examples Pardo and Patterson identify . . . are largely errors of phrasing, rather than any manifest confusion. . . . At most, some scholars are guilty of hyperbole.’ *Ibid*. ‘these examples are . . . not typically from influential scholars in the field, and largely represent little more than illustrations of hyperbolic metaphor.’ *Ibid*, 11.

<sup>46</sup> ‘even if a few scholars actually equate particular brain states with “lying,” there is no reason to expect this error to affect judgments in the courtroom.’ *Ibid*, 8. ‘there is no evidence that at the true intersection of law and neuroscience—in the courtroom—that any such confusion is occurring.’ *Ibid*, 11. ‘If fMRI empirically fits a legal issue in dispute (i.e., a witness’s veracity), and is not excluded for myriad other reasons, it should be admitted.’ *Ibid*, 8.

<sup>47</sup> Pardo & Patterson (n 1) 20-22. Bennett & Hacker (n 23) coined the term to refer to instances in which attributes applicable to human beings are applied to parts of the brain.

<sup>48</sup> ‘Although they use several examples to decry the prospect of rampant confusion regarding the mereological fallacy . . . fMRI lie detection is once again singled-out for particular attention . . . The crux of the confusion Pardo and Patterson fear thus lies not in correlative data that might be associated with subjects lying or truth-telling . . . but the belief that the neurotechnology can access the subject’s brain ‘like a video camera.’ Faigman (n 30) 10-11.

discuss (along with additional sections on empirical and practical issues), and we were clear that it was not the most important conceptual issue with fMRI lie detection. As we stated: ‘The most significant conceptual issue raised by the fMRI lie-detection research is whether the studies are measuring lies.’<sup>49</sup> This looks a lot like ‘operational analysis,’ and that is true, but it also an area where philosophical analysis can illuminate the issues and flesh out conceptual problems that may not be immediately apparent to researchers or lawyers. We relied, for example, on recent philosophical work on the concept of lying by Don Fallis to illustrate the social, normative aspect of lying (and the conceptual relationship between lying and an intent to deceive).<sup>50</sup> We then connected the conceptual issues to relevant legal issues, and we argued that the fMRI studies were not in fact measuring lies at all. Faigman discusses none of this.

Second, *pace* Faigman, this problem is not the result of a few bad apples using hyperbole or poor choice. It is systemic. We cited 24 articles and we argued that, with the possible exception of one study, none of the studies discussed that purported to study lying with fMRI were in fact measuring lying.<sup>51</sup> This list includes most of the published research on the topic at the time we completed our book. The additional conceptual

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<sup>49</sup> Pardo & Patterson (n 1) 109. See also Guerrero (n 39) (‘their most philosophically interesting contribution to this discussion comes with a number of the points they make regarding the conceptual issues that arise with respect to so-called "brain-based lie detection" . . . If you want to run a test to see if someone is lying, you need to know what it is to lie; you need to have an accurate understanding of the concept of lying and how it relates to the concept of deception, for example.’).

<sup>50</sup> Don Fallis, ‘What is Lying?’ (2009) 106 *Journal of Philosophy* 29.

<sup>51</sup> Moreover, these studies include the published articles relied on by the expert in the *Semrau* case, a case which Faigman argues contained no signs of conceptual confusion.

problems that we identified, including equating lies with an intent to deceive, also run throughout the literature.<sup>52</sup>

Third, the conceptual problems are not merely problematic in the ‘stratosphere.’<sup>53</sup> They affect the real world on the ground. Faigman discusses the recent judicial opinions in *Semrau*,<sup>54</sup> which he claims do not exhibit any signs of the conceptual confusion.<sup>55</sup> We agree with Faigman that the outcomes were correct, and we share his admiration for the excellent judicial work in assessing the evidence. But we disagree that conceptual issues did not arise in that case. In addition to reasons the courts cited for excluding the evidence, the studies relied upon by the expert were among those we cited as failing to measure lying.<sup>56</sup>

We return, then, to Faigman’s question. Given, he assumes, that the studies are simply trying to measure neurological events that correlate with lying, he asks: ‘what’s the problem?’ The problem, among others, as should now be clear, is that the studies are not measuring anything that correlates with lying because they are not measuring lying. Given that this evidence is ‘knocking on the courtroom door,’ we thought that conclusion (as well as a host of other problematic inferences) was worth pointing out.<sup>57</sup> Could one

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<sup>52</sup> They also affected the expert testimony in the *Semrau* case. The expert testified, for example, that ‘A lie is the intentional act of deceit.’ Pardo & Patterson (n 1) 108 (quoting *Semrau* Hearing Transcript at 159).

<sup>53</sup> Faigman (n 30) 9 (‘the situation on the ground does not warrant the fears from 40,000 feet.’)

<sup>54</sup> *United States v Semrau*, 693 F.3d 510 (6th Cir. 2012); *United States v Semrau*, 2010 WL 6845092 (W.D. Tenn. 2010).

<sup>55</sup> Faigman (n 30) 11-12.

<sup>56</sup> The testimony also included other conceptual problems. See (n 52).

<sup>57</sup> Some of the problematic inferences we identified concern giving too much weight to the evidence. Faigman, for reasons we do not understand, takes us to task for this and reminds us that evidential relevance is not evidential sufficiency (‘a brick is not a wall’). Of course. We will remind Professor



have recognized this point without philosophical analysis? Sure. But we think it helps. The expert in *Semrau*, for example, was proffered by a lawyer, and the expert's company had a team of legal and scientific advisors. If it were obvious that the research was not measuring lies, you would think that someone would have mentioned that to the expert before he testified to the contrary.<sup>58</sup>

### *C. The Significance of the Conceptual Issues for Neurolaw*

At a more general level, we take issue with Faigman's claims about the significance of our analysis for neurolaw. He denies its significance for two reasons. First, he claims that we 'cherry picked' our targets, 'typically those not influential in the field.'<sup>59</sup> Second, he claims that 'at most' we have shown that those we discussed had brief lapses of 'hyperbole' and 'should choose their words more carefully.'<sup>60</sup> Both claims are false, generally throughout the book, and with regard to the mereological fallacy specifically. We chose our examples precisely because they were influential viewpoints.<sup>61</sup> The arguments typified general positions in the literature. We focused where we did because they involved clear, powerful, and sophisticated analysis by thoughtful, well-established, and well-respected scholars in their fields. For example, we challenged the arguments in

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Faigman of another important evidentiary principle (of which he is no doubt aware): evidence must be what the proffering party purports it to be. See *Federal Rules of Evidence* 602, 901-02, 104(b).

<sup>58</sup> And this is one of six conceptual issues we identified, along with a host of additional empirical and practical ones.

<sup>59</sup> Faigman (n 30) 11.

<sup>60</sup> *Ibid*, 8, 10.

<sup>61</sup> As other reviewers have noticed. See, e.g., Maynen (n 39) ('They often pick out representatives of certain positions whose arguments or statements are analyzed and criticized. For instance, they argue against Greene and Cohen (2004) that neuroscience findings call for major revisions of criminal law, but their argument can be considered directed towards many others who have made similar claims with respect to neuroscience, free will and (legal) responsibility.')

the popular paper by Joshua Greene and Jonathan Cohen on the relationship between neuroscientific findings and philosophical arguments, on one hand, and criminal responsibility and punishment, on the other.<sup>62</sup> We also critiqued related claims by renowned philosopher Patricia Churchland, a pioneer in the field of neuro-philosophy.<sup>63</sup>

Similarly, with regard to the mereological fallacy in particular, we explained how the conceptual issues related directly to important doctrinal issues involving criminal law and criminal procedure. For example, we discussed Deborah Denno's analysis of the relationship between the famous Libet studies and the criminal law's voluntary-act requirements<sup>64</sup> and Nita Farahany's analysis of the relationships between neuroscientific evidence and the Fourth and Fifth Amendments.<sup>65</sup> In both instances, the conceptual issues were neither mere hyperbole nor tangential to the doctrinal analysis. Rather, the issues turned on them.<sup>66</sup> We do not have the space to recreate our arguments with regard to these examples (and we could give several others). And some readers will no doubt

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<sup>62</sup> Joshua Greene & Jonathan Cohen, 'For the Law, Neuroscience Changes Nothing and Everything' (2004) 359 *Philosophical Transactions Royal Society London B* 1775. See also Adam Kolber, 'Will There Be a Neurolaw Revolution?' (2014) 89 *Indiana Law Journal* 807: 810 (noting that the paper by Greene and Cohen has 'shaped a substantial part of the debate in neurolaw').

<sup>63</sup> Pardo & Patterson (n 1) 33-42.

<sup>64</sup> Pardo & Patterson (n 1) 122-30. See also Morse (n 2) ('[Pardo and Patterson] thoroughly demolish the more radical and radically confused claim by some that experiments like Libet's have essentially demonstrated that there is no real difference between action and automatism . . . They expose the dualist thinking at the heart of such claims and the mistake of attributing agentic capacities to mechanistic systems, the mereological fallacy. I might add that the Libet juggernaut seems to be abating.')

<sup>65</sup> On the significance of Professor Farahany's work, see Christopher Shea, 'Watch What You Think. Others Can' (16 September 2013) *Chronicle of Higher Education*.

<sup>66</sup> In one case, we challenged whether 'readiness potentials' undermine the assumptions underlying the criminal law's voluntary-act requirement by causing an action before a person consciously chooses to act. In the other case, we challenged whether what Professor Farahany characterizes as 'brain utterances' are like files in a file cabinet and thus are to be treated like such files for purposes of search-and-seizure and self-incrimination doctrine.

not be persuaded by some of our analysis. But the claims that we cherry picked examples and that the conceptual issues do not matter on the ground are false.

#### *D. Philosophy and Neurolaw*

At a basic level, it seems evident to us that Professor Faigman misunderstands how philosophy may contribute to neurolaw. His spatial metaphor fails. As we conceive of things, philosophy contributes not by shouting pronouncement from the stratosphere, but by working with scientists, lawyers, and other interested parties. Our aim is not to criticize the hard and important work by scientists, lawyers, and judges ‘on the ground,’ but rather to better understand that work and the issues involved, with an eye toward possible improvements for the law as a result. In other words, we see it as continuous with ‘operational analysis,’ and we agree with Faigman’s conception of neuroscience potentially contributing to traditional psychological issues.

Philosophy, as we understand it, contributes to these endeavors by illuminating the conceptual issues. Although these issues are not the exclusive domain of philosophy, philosophical attention to the relevant concepts and their implications may provide greater understanding. The point is not to police the use of words or concepts by scientists or lawyers, but rather to shed light on the phenomena picked out by those concepts. Bringing sharp attention to these concepts can sometimes help to untangle the inevitable conceptual confusions that arise because of the complexities of the issues involved.<sup>67</sup> In short, philosophy helps to make explicit what is implicit in the various

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<sup>67</sup> See, for example, Faigman’s own mischaracterizations of the fMRI studies on ‘lying’ in his review. Possible confusions in neurolaw may involve the concept of ‘concept’ itself. For example, early in his review, Faigman asserts: ‘A second and closely related anxiety they have is that neurolaw scholars believe that sometimes *concepts can be identified wholly in brain states.*’ *Ibid*, 2. We expressed no such worry, nor did we cite anyone claiming this. One issue we did discuss was the (mistaken) claim that the *phenomena* picked out or referred to by concepts such as knowledge, intent, belief, etc. could be identified with brain states. It is one thing to claim that, for example, knowledge is a brain state and another thing entirely to

practices, claims, and arguments in the neurolaw context. Not every neurolaw practice, claim, or argument will benefit from making its implicit philosophical presuppositions (for example, about the relationships between mind and brain, or action and intent, or knowledge and belief) more explicit and thus subject to scrutiny, but surely some do. Philosophy thus conceived is not in the stratosphere. It, too, is on the ground. Faigman therefore need not fear philosophy—he, along with the scholars, scientists, lawyers, and judges engaged with neurolaw are already doing it.

We appreciate Faigman taking the time to discuss work he disagrees with so strongly. We think this is how knowledge advances and understanding improves. We hope that illustrating what we take to be Faigman's several misunderstandings brings greater clarity to the issues—which we charitably interpret to be his goal as well.

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claim that the concept of knowledge is a brain state. Your concept of a chair is not a chair. We of course appreciate the irony in pointing out this example.