

University of Pennsylvania Carey Law School

Penn Carey Law: Legal Scholarship Repository

All Faculty Scholarship

Faculty Works

2015

Neuroscience, Free Will, and Criminal Responsibility


Stephen J. Morse

University of Pennsylvania Carey Law School

Author ORCID Identifier:

 [Stephen Morse 0000-0002-7260-5012](https://orcid.org/0000-0002-7260-5012)

Follow this and additional works at: https://scholarship.law.upenn.edu/faculty_scholarship

 Part of the [Behavior and Behavior Mechanisms Commons](#), [Criminal Law Commons](#), [Law and Philosophy Commons](#), [Medical Jurisprudence Commons](#), [Neurosciences Commons](#), [Philosophy of Mind Commons](#), and the [Public Law and Legal Theory Commons](#)

Repository Citation

Morse, Stephen J., "Neuroscience, Free Will, and Criminal Responsibility" (2015). *All Faculty Scholarship*. 1604.

<https://doi.org/10.1017/CB09781139565820.014>

This Book Chapter is brought to you for free and open access by the Faculty Works at Penn Carey Law: Legal Scholarship Repository. It has been accepted for inclusion in All Faculty Scholarship by an authorized administrator of Penn Carey Law: Legal Scholarship Repository. For more information, please contact biddlerepos@law.upenn.edu.

13 Neuroscience, free will, and criminal responsibility

Stephen J. Morse

ABSTRACT

This chapter argues that the folk-psychological model of the person and responsibility is not challenged by determinism in general or by neuro-determinism in particular. Until science conclusively demonstrates that human beings cannot be guided by reasons and that mental states play no role in explaining behavior, the folk-psychological model of responsibility is justified. This chapter discusses the motivations to turn to science to solve the hard normative problems the law addresses, as well as the law's psychology and its concepts of the person and responsibility. Then it considers the general relation of neuroscience to law, which I characterize as the issue of "translation." The limits of neurolaw are canvassed and the chapter argues that neurolaw poses no radical challenge to the concepts of the person and responsibility. The chapter is cautiously optimistic about the contribution that neuroscience may make to law in the near and intermediate term. The penultimate section examines some of the claims concerning responsibility made in other chapters in this volume followed by a brief conclusion.

Introduction

In a 2002 editorial published in *The Economist* (2002), the following warning was given: "Genetics may yet threaten privacy, kill autonomy, make society homogeneous and gut the concept of human nature. But neuroscience could do all of these things first." But neither genetics nor any other science that was predicted to revolutionize the law, including behavioral psychology, sociology, and psychodynamic psychology, to name but a few, has had this effect. This will also be true of neuroscience, which is simply the newest science on the block. Neuroscience is not going to do the terrible things *The Economist* fears, at least not in the foreseeable future. Neuroscience has many things to say, but not nearly

as much as people who want to change the legal system would hope, especially in relation to criminal law.

In a series of articles and book chapters (Morse, 2004, 2006a, 2006b, 2007a, 2007b, 2011a, 2011b, 2011c, 2012, 2013a, 2013b, 2013c), I argue that the new cognitive, affective, and social neuroscience poses no fundamental challenge to the coherence of the doctrines and practices of criminal responsibility. Moreover, at present, the new neuroscience suggests no specific doctrinal reforms and has little role, if any, to play in the adjudication of criminal cases. At most, in the near to intermediate term, neuroscience may make modest contributions to legal policy and case adjudication. Although there have been major advances in neuroscience since I began the series, the conclusions I reached about the legal implications are entirely unchanged. Thus, there will inevitably be a great deal of overlap between this chapter and my previous writing on the topic because I have achieved a settled understanding about the relation between law and neuroscience. Until there are conceptual or scientific breakthroughs that will cast doubt on this understanding – and there well may be such breakthroughs – for now this is my story and I am sticking to it.

There is a problem about free will, but not in the law. The genuine problem of free will is metaphysical and often spawns confusion. Roughly, it refers to whether human beings possess the ability or power to act uncaused by anything other than themselves, which is referred to as libertarian freedom of the will. The importance of having this power or ability results from the controversial belief that it underwrites the possibility of holding people genuinely responsible. Solving the free will problem would have profound implications for responsibility doctrines and practices, but, at present, the problem plays no proper role in the law and neuroscience cannot solve it in any case. Criminal law addresses problems genuinely related to responsibility, including consciousness, the formation of mental states such as intention and knowledge, the capacity for rationality, and compulsion, but it never addresses the presence or absence of libertarian free will. Indeed, if criminal responsibility is properly understood, libertarian free will is not even foundational.

The new neuroscience has spawned a new generation of free will skeptics, not all of whom suffer from Brain Overclaim Syndrome (although most do), and most of whom wrongly believe that the discoveries of neuroscience entail consequentialism. Many of these claims suffer from confusions, however. Either the skeptics are preaching to the choir about libertarian freedom because almost no one believes that human beings possess such god-like powers, or they have failed

sufficiently to respond to compatibilist accounts of responsibility that do not require libertarian freedom. Often, people in the latter group have not clearly identified what they mean by free will. In the words of the philosopher, Manuel Vargas (2013), the debate about free will has been bedeviled by “troubled, fragmented” thinking about the problem.

The central thesis of this chapter is that the folk-psychological model of the person that is central to our explanations of human behavior and to responsibility doctrines and practices is not challenged by determinism in general or by neurodeterminism in particular. Criminal responsibility doctrines and practices are fully compatible with the truth of determinism (or causal closure). Until science conclusively demonstrates that human beings are not responsive to and cannot be guided by reasons and that mental states do not play even a partial causal role in explaining behavior, the folk-psychological model of responsibility will endure as fully justified. Scientific findings, whether from neuroscience or other sciences, will be useful only if they help elucidate the law’s folk-psychological criteria. This claim does not “wall off” the law’s responsibility practices from science. Rather, it simply requires that the scientific data be translated into the law’s folk-psychological criteria. As the eminent forensic psychiatrist Phillip Resnick says generally about legally relevant behavior: “You need to understand why. And you can’t see why on an fMRI” (quoted in Doherty, 2007).

This chapter first addresses the law’s motivation and the motivation of some advocates to turn to science to solve the very hard normative problems that law addresses. The next section discusses the law’s psychology and its concepts of the person and responsibility. Then it considers the general relation of neuroscience to law, which I characterize as the issue of “translation.” The following section canvasses various distractions that have bedeviled clear thinking about the relation of scientific, causal accounts of behavior to responsibility. Next, it examines the limits of neurolaw and considers why neurolaw does not pose a genuinely radical challenge to the law’s concepts of the person and responsibility. The chapter then makes a case for cautious optimism about the contribution that neuroscience may make to law in the near and intermediate term. The penultimate section examines some of the claims concerning responsibility made by other chapters in this volume. A brief conclusion follows.

The source of neuroexuberance

Everyone understands that legal issues are normative, addressing how we should regulate our lives in a complex society. How do we live together?

What are the duties we owe each other? For violations of those duties, when is the state justified in imposing the most afflictive – but sometimes justified — exercises of state power, criminal blame, and punishment? When should we do this, to whom, and how much?

Virtually every legal issue, including the criteria for criminal responsibility, is contested, and there is always room for debate about policy, doctrine, and adjudication. In a recent book, Professor Robin Feldman has argued that law lacks the courage forthrightly to address the difficult normative issues that it faces (2009). The law therefore adopts what Feldman terms an “internalizing” and an “externalizing” strategy for using science to try to avoid the difficulties. In the internalizing strategy, the law adopts scientific criteria as legal criteria. A futuristic example might be using neural criteria for criminal responsibility. In the externalizing strategy, the law turns to scientific or clinical experts to make the decision. An example would be using forensic clinicians to decide whether a criminal defendant is competent to stand trial and then simply rubberstamping the clinician’s opinion. Neither strategy is successful because each avoids facing the hard questions and impedes legal evolution and progress. Professor Feldman concludes, and I agree, that the law does not err by using science too little, as is commonly claimed. Rather, it errs by using it too much because the law is too insecure about its resources and capacities to do justice.

A fascinating question is why so many enthusiasts seem to have extravagant expectations about the contribution of neuroscience to law, especially criminal law. Here is my speculation about the source. Many people intensely dislike the concept and practice of retributive justice, thinking that they are prescientific and harsh. Their hope is that the new neuroscience will convince the law at last that determinism is true, no offender is genuinely responsible, and the only logical conclusion is that the law should adopt a consequentially based prediction/prevention system of social control guided by the knowledge of the neuroscientist-kings who will finally have supplanted the platonic philosopher-kings (e.g., Greene & Cohen, 2006). On a more modest level, many advocates think that neuroscience may not revolutionize criminal justice, but neuroscience will demonstrate that many more offenders should be excused and do not deserve the harsh punishments imposed by the United States criminal justice system. Four decades ago, our criminal justice system would have been using psychodynamic psychology for the same purpose. More recently, genetics has been employed in a similar manner. The impulse, however, is clear: jettison desert, or at least mitigate judgments of desert. As will be shown below, however, these advocates often adopt an untenable theory of mitigation

or an excuse that quickly collapses into the nihilistic conclusion that no one is really criminally responsible.

The law's psychology and concept of the person

Criminal law presupposes a “folk-psychological” view of the person and behavior. This psychological theory explains behavior *in part* by mental states such as desires, beliefs, intentions, willings, and plans. Biological and other psychological and sociological variables also play a causal role, but folk psychology considers mental states fundamental to a full causal explanation and understanding of human action. Lawyers, philosophers, and scientists argue about the definitions of mental states and theories of action, but that does not undermine the general claim that mental states are fundamental. Indeed, the arguments and evidence that disputants use to convince others presuppose the folk-psychological view of the person. Brains do not convince each other, people do. Folk psychology presupposes only that human action will at least be rationalizable by mental state explanations or will be responsive to reasons – including incentives – under the right conditions.

For example, the folk-psychological explanation for why you are reading this chapter is, roughly, that you desire to understand the relation of neuroscience to criminal responsibility or to law generally. You believe that reading the chapter will help fulfill that desire, so you formed the intention to read it. This is a practical, rather than a deductive, syllogism. Brief reflection should indicate that the law's psychology must be a folk-psychological theory, a view of the person as a conscious – and potentially self-conscious – creature who forms and acts on intentions that are the product of the person's other mental states. We are the sort of creatures who can act for and respond to reasons. The law treats persons generally as intentional creatures and not simply as mechanistic forces of nature.

Law is primarily action-guiding and is not able to guide people directly and indirectly unless people are capable of using rules as premises in their reasoning about how they should behave. Unless people could be guided by law, including by the law's influence on the formation of character and habits, it would be useless (and perhaps incoherent) as an action-guiding system of rules. Legal rules are action-guiding primarily because these rules provide an agent with good moral or prudential reasons for forbearance or action. Human behavior can be modified by means other than influencing deliberation, and human beings do not always deliberate before they act. Nonetheless, the law presupposes folk psychology even when we most habitually follow the legal rules. Unless people are capable

of understanding and then using legal rules to guide their conduct, the law is powerless to affect human behavior.

The legal view of the person does not hold that people must always reason or consistently behave rationally according to some preordained, normative notion of rationality. Rather, the law's view is that people are capable of acting for reasons and are capable of minimal rationality according to predominantly conventional, socially constructed standards. The type of rationality the law requires is the ordinary person's common-sense view of rationality, not the technical notion that might be acceptable within the disciplines of economics, philosophy, psychology, computer science, and the like.

Virtually everything for which agents deserve to be praised, blamed, rewarded, or punished is the product of mental causation and, in principle, is responsive to reasons, including incentives. Machines may cause harm, but they cannot do wrong, and they cannot violate expectations about how people ought to live together. Machines do not deserve praise, blame, reward, punishment, concern, or respect because they exist or because they cause results that change the world. Only people, intentional agents with the potential to act, can do wrong and violate expectations of what they owe each other.

Many scientists and some philosophers of mind and action might consider folk psychology to be a primitive or prescientific view of human behavior. For the foreseeable future, however, the law will be based on the folk-psychological model of the person and behavior described. Until and unless scientific discoveries convince us that our view of ourselves is radically wrong, the basic explanatory apparatus of folk psychology will remain central. It is vital that scientific critics of the criminal law should understand that claims that our responsibility practices are not coherent and justified can only be demonstrated by showing that agency is an illusion. But as long as we have reason to believe, as we most assuredly do (Fodor, 1989; and see below), that human beings have the capacity to be guided by reason – a capacity fully consistent with the truth of determinism – neuroscience poses no general challenge to our responsibility doctrines and practices. If neuroscience is to have appropriate influence on current criminal law and legal decision-making, the science must be relevant to and translated into the law's folk-psychological framework.

Criminal responsibility doctrines

All of the law's doctrinal criteria for criminal responsibility are folk-psychological. Let us begin with the definitional criteria, the "elements" of crime. The "voluntary" act requirement is defined, roughly, as an

intentional bodily movement – or omission in cases in which the person has a duty to act – done in a reasonably integrated state of consciousness. Other than crimes of strict liability, all crimes also require a culpable mental state, such as purpose, knowledge, or recklessness. All affirmative defenses of justification and excuse involve an inquiry into the person's mental state, such as the belief that self-defensive force was necessary or the lack of knowledge of right from wrong.

Our folk-psychological concepts of criminal responsibility follow logically from the action-guiding nature of law itself, from its folk-psychological concept of the person and action, and from the aim of achieving retributive justice, which holds that no one should be punished unless they deserve it and no more than they deserve. The general capacity for rationality is the primary condition for responsibility, and the lack of that capacity is the primary condition for excusing a person. If human beings were not rational creatures who could understand the good reasons for action and were not capable of conforming to legal requirements through intentional action or forbearance, the law could not adequately guide action and would not be just. Legally responsible agents are therefore people who have the general capacity to grasp and be guided by good reason in particular legal contexts (Wallace, 1994, considering responsibility generally).

In cases of excuse, the agent who has done something wrong acts for a reason but is either incapable of rationality generally or incapable on the specific occasion in question. This explains, for example, why young children and some people with mental disorders are not held responsible. The amount of lack of capacity for rationality that is necessary to find the agent not responsible is a moral, social, political, and, ultimately, legal issue. It is not a scientific, neuroscientific, medical, psychological, or psychiatric issue.

Compulsion or coercion is also an excusing condition. Literal compulsion exists when the person's bodily movement is a pure mechanism that is not rationalizable by reference to the agent's mental states. These cases defeat the requirement of a "voluntary act." For example, a tremor or spasm produced by a neurological disorder is not an action because it is not intentional and, therefore, defeats the ascription of a voluntary act. Metaphorical compulsion exists when an agent acts intentionally but in response to some hard choice imposed on the agent through no fault of his or her own. For example, if a miscreant holds a gun to an agent's head and threatens to kill her unless she kills another innocent person, it would be wrong to kill under these circumstances. Nevertheless, the law may decide as a normative matter to excuse the act of intentional killing because the agent was motivated by a threat so great that it would be

supremely difficult for most citizens to resist. Cases involving internal compulsive states are more difficult to conceptualize because it is difficult to define and assess “loss of control” (Morse, 1994, 2002, 2011a). The cases that most fit this category are “disorders of desire,” such as addictions and sexual disorders. The question is why these acting agents lack control, but other people with strong desires do not. If an agent frequently yields to his or her apparently very strong desires at great social, medical, occupational, financial, and legal cost, the agent will often say or observers will infer the agent was “out of control,” and an excuse or mitigation is therefore warranted. But why mitigation or excuse should obtain is difficult to understand.

All the distinctions criminal responsibility criteria draw – act/no act; culpable mental state/no culpable mental state; rational capacity/lack of rational capacity; compulsion/no compulsion – are consistent with retributive and consequential theories of just blame and punishment that we endorse and with the truth of determinism. For example, a person whose bodily movement is a spasm that causes harm does not deserve blame and punishment for the harm because the spasm was not the agent’s action and such harms cannot be deterred by the action-guiding function of the criminal law. Now assume that determinism is true. It is simply also true that some bodily movements are actions and others are not; that some people form culpable mental states and others don’t; that some people commit crimes while they are psychotic and most other people who commit crimes are not psychotic; and that some people commit crimes because they are threatened with death or grievous bodily harm if they don’t commit the crime and most other people who commit crimes are not so threatened. Wittgenstein famously asked: “when ‘I raise my arm’, my arm goes up. And the problem arises: what is left over if I subtract the fact that my arm goes up from the fact that I raise my arm?” (1991, para. 621). This is the question of agency. To dismantle this folk-psychological structure, neuroscience would have to demonstrate that the bodily movement produced by a muscular spasm and an identical movement that was intentional are indistinguishable metaphysically or should be treated morally the same. Neuroscience does not remotely indicate the former and it is the naturalistic fallacy to claim that it can do the latter.

Lost in translation? Legal relevance and the need for translation

What in principle is the possible relation of neuroscience to law? We must begin with a distinction between internal relevance and external

relevance. An internal contribution or critique accepts the general coherence and legitimacy of a set of legal doctrines, practices, or institutions and attempts to explain or alter them. For example, an internal contribution to criminal responsibility may suggest the need for doctrinal reform of, say, the insanity defense, but it would not suggest that the notion of criminal responsibility is itself incoherent or illegitimate. By contrast, an externally relevant critique suggests that the doctrines, practices or institutions are incoherent, illegitimate, or unjustified. Because a radical, external critique has little possibility of success at present (as is explained below), I make the simplifying assumption that the contributions of neuroscience will be internal and thus will need to be translated into the law's folk-psychological concepts.

As we have seen, the law's criteria for responsibility and competence are essentially behavioral – acts and mental states. The criteria of neuroscience are mechanistic – neural structure and function. Is the apparent chasm between those two types of discourse bridgeable? This is a familiar question in the field of mental health law (Stone, 1984), but there is even greater dissonance in neurolaw. Psychiatry and psychology sometimes treat behavior mechanistically, sometimes treat it folk-psychologically, and sometimes blend the two. Neuroscience, in contrast, is purely mechanistic and eschews folk-psychological concepts and discourse. Neurons and neural networks do not act intentionally for reasons. They have no sense of past, present, and future, and no aspirations. They do not recognize that they will die. Thus, the gap will be harder to bridge.

The brain does enable the mind (even if we do not know how this occurs). Therefore, facts we learn about brains in general or about a specific brain could, in principle, provide useful information about mental states and about human capacities in general and in specific cases. Some believe that this conclusion is a category error (Bennett & Hacker, 2003; Pardo & Patterson, 2013). This is a plausible view, and perhaps it is correct. If it is, then the whole subject of neurolaw is empty, and there was no point writing this chapter in the first place. Let us therefore bracket this pessimistic view and determine what follows from the more optimistic position that what we learn about the brain and nervous system can be potentially helpful to resolving questions of criminal responsibility if the findings are properly translated into the law's psychological framework.

The question is whether the new neuroscience is legally relevant because it makes a proposition about responsibility or competence more or less likely to be true. Any legal criterion must be established independently, and biological evidence must be translated into the criminal law's

folk-psychological criteria. That is, the expert must be able to explain precisely how the neuroevidence bears on whether the agent acted, formed the required *mens rea*, or met the criteria for an excusing condition. If the evidence is not directly relevant, the expert should be able to explain the chain of inference from the indirect evidence to the law's criteria. At present, as I explain below in the "Limits of neurolaw" section, few such data exist, but neuroscience is advancing so rapidly that such data may exist in the near or medium term.

Dangerous distractions concerning neuroscience and criminal responsibility

This section considers a number of related issues that are often thought to be relevant to criminal responsibility but that are in fact irrelevant, confusing, and distracting: free will, causation as an excuse, causation as compulsion, prediction as an excuse, dualism, and the non-efficacy of mental states. It is important to correct these errors because much of the unjustified legal exuberance about the contributions of neuroscience flow from them. The legal exuberance also flows, however, from unrealistic expectations about the scientific accomplishments of neuroscience. The next section of this chapter addresses the scientific exuberance.

Contrary to what many people believe and what judges and others sometimes say, free will in the strong sense of metaphysical libertarian freedom is not a legal criterion that is part of any doctrine, and it is not even foundational for criminal responsibility (Morse, 2007b). As discussed above, criminal law doctrines are fully consistent with the truth of determinism or universal causation that allegedly undermines the foundations of responsibility and they are consistent with moral and legal theories of responsibility and justice that we have reason to endorse. Criminal law addresses folk-psychological issues genuinely related to responsibility, including consciousness, the formation of mental states such as intention and knowledge, the capacity for rationality, and compulsion. But the law never addresses the presence or absence of free will understood as libertarian freedom.

When most people use the term "free will" in the context of legal responsibility, they are typically using it loosely as a synonym for the conclusion that the defendant was or was not criminally responsible. They typically have reached this conclusion for reasons that do not involve free will – for example, that the defendant was legally insane or acted under duress – but such use of the term free will only perpetuates misunderstanding and confusion. Once the legal criteria for excuse have been met – and no excuse includes lack of free will as a criterion – the

defendant will be excused without any reference whatsoever to free will as an independent ground for excuse.

There is a genuine metaphysical problem regarding free will, which is whether human beings have the capacity to act uncaused by anything other than themselves and whether this capacity is a necessary foundation for holding anyone legally or morally accountable for criminal conduct. Philosophers and others have debated these issues in various forms for millennia. This is a philosophical issue, but it is not a problem for the law, and neuroscience raises no new challenge to this conclusion. Solving the free will problem would have profound implications for responsibility doctrines and practices, such as blame and punishment, but having or lacking libertarian freedom is not a criterion of any civil or criminal law doctrine.

The majority of experts on this question are “compatibilists,” people who think that responsibility is genuinely possible even if determinism is true. Contrary to what philosophically naïve critics may think, compatibilism is not an illusion or sleight of hand definitional trick, it does not presuppose substance dualism, and it has powerful moral and metaphysical support (e.g., Vihvelin, 2013). Admittedly, there is no resolution in sight for the metaphysical problem, but compatibilism cannot simply be waved away. Its arguments must be met by responsibility skeptics who can try to show either that it is metaphysically unsound or that the model of the person and freedom it presupposes – roughly, a reasons-responsive creature like us – is simply wrong as a scientific matter. If the arguments cannot be successfully met – and I believe they cannot be at present or for the foreseeable future – the responsibility skeptic would do well to accept the more limited conception of freedom that compatibilist responsibility adopts, especially given the importance to our moral and social lives of responsibility practices.

In short, neuroscience is simply the most recent, mechanistic causal science that appears deterministically to explain behavior. Neuroscience thus joins social structural variables, behaviorism, genetics, and other scientific explanations that have also been deterministic explanations for behavior. In principle, however, neuroscience adds nothing new, even if neuroscience is a better, more persuasive science than some of its predecessors. No science, including neuroscience, can demonstrate that libertarian free will does or does not exist. As long as free will in the strong sense is not foundational for just blame and punishment and is not a criterion at the doctrinal level – which it is not – the truth of determinism or universal causation poses no threat to legal responsibility. Neuroscience may help shed light on folk-psychological excusing conditions, such as automatism or legal insanity, but the truth of determinism is not an

excusing condition. The law will be fundamentally challenged only if neuroscience or any other science can conclusively demonstrate that the law's psychology is wrong, and that we are not the type of creatures for whom mental states are causally effective. This is a different question from whether determinism undermines responsibility, however, and this article returns to the more radical challenge below.

A related confusion is that behavior is excused if it is caused, but causation per se is not a legal or moral mitigating or excusing condition. I termed this confusion the "fundamental psycholegal error" (Morse, 1994). At most, causal explanations can only provide evidence concerning whether a genuine excusing condition, such as lack of rational capacity, was present. For example, suppose a life marked by poverty and abuse played a predisposing causal role in a defendant's criminal behavior or that an alleged new mental syndrome played a causal role in explaining criminal conduct. The claim is often made that such causes – for which the agent is not responsible – should be an excusing or mitigating position per se, but this claim is false.

All behavior is the product of the necessary and sufficient causal conditions without which the behavior would not have occurred, including brain causation, which is always part of the causal explanation for any behavior. If causation were an excusing condition per se, then no one would be responsible for any behavior. Some people might welcome such a conclusion and believe that responsibility is impossible, but this is not the legal and moral world we inhabit. The law holds most adults responsible for most of their conduct, and genuine excusing conditions are limited. Thus, unless the person's history or mental condition, for example, provides evidence of an existing excusing or mitigating condition, such as lack of rational capacity, there is no reason for excuse or mitigation.

Even a genuinely abnormal cause is not per se an excusing condition. For example, imagine an armed robber who suffers from intermittent hypomania and who robs only when clinically hypomanic because only then does he or she feel sufficiently energetic and confident. In other words, the hypomania is a "but for" cause of these robberies. Nevertheless, the robber would not be excused for an armed robbery because hypomania seldom compromises rational capacity sufficiently to warrant an excuse. If an armed robbery were committed under the influence of a delusional belief the robber's mania produced, then he or she might be excused by reason of legal insanity. In that case, the excusing condition would be compromised rationality and not the mania per se. In short, a neuroscientific causal explanation for criminal conduct, like any other type of causal explanation, does not per se mitigate or excuse. It only

provides evidence that might help the law resolve whether a genuine excuse existed, or it may in the future provide data that might be a guide to prophylactic or rehabilitative measures.

Compulsion is a genuine mitigating or excusing condition, but causation –including brain causation – is not the equivalent of compulsion. Compulsion may be either literal or metaphorical and normative. It is crucial to recognize that most human action is not plausibly the result of either type of compulsion, but all human behavior is caused by its necessary and sufficient causes – including brain causation. Even abnormal causes are not necessarily compelling. To illustrate, suppose that a person has weak pedophilic urges and weak sexual urges in general. If this person molested a child, there would be no ground for a compulsion excuse. If causation was the equivalent of compulsion, all behavior would be compelled and no one would be responsible. Once again, this is not a plausible account of the law's responsibility conditions. Causal information from neuroscience might help us resolve questions concerning whether legal compulsion existed, or it might be a guide to prophylactic or rehabilitative measures when dealing with plausible legal compulsion. Causation, however, is not *per se* compulsion.

Causal knowledge, whether from neuroscience or any other science, can enhance the accuracy of behavioral predictions, but predictability is also not a *per se* excusing or mitigating condition – even if the predictability of the behavior is perfect. To understand this, consider how many things we do that are perfectly predictable but for which there is no plausible excusing or mitigating condition. If the variables that enhance prediction also produce a genuine excusing or mitigating condition, then excuse or mitigation is justified for the latter reason and independent of the prediction.

For example, recent research demonstrates that a history of childhood abuse coupled with a specific, genetically caused enzyme abnormality that produces a neurotransmitter deficit vastly increases the risk that a person will behave antisocially as an adolescent or young adult (Caspi et al., 2002). Does this mean that an offender with this gene by environment interaction is not responsible or less responsible? No. The offender may not be fully responsible or responsible at all, but not because there is a strong but partial causal explanation. What is the intermediary excusing or mitigating principle? Are these people, for instance, more impulsive? Are they lacking rationality? What is the actual excusing or mitigating condition?

Again, causation is not compulsion, and predictability is not an excuse. Just because an offender is caused to do something or is predictable does not mean that the offender was compelled to do the crime charged or is

otherwise not responsible. Brain causation – or any other kind of causation – does not mean that we are automatons, not really acting agents at all, or otherwise excused.

Most informed people are not “dualists” concerning the relation between the mind and the brain. That is, they no longer think that our minds – or souls – are independent of our brains and bodies more generally and can somehow exert a causal influence over our bodies. It may seem as if law’s emphasis on the importance of mental states as causing behavior is based on a prescientific, outmoded form of dualism, but this is not the case. Although the brain enables the mind, we have no idea how this occurs and have no idea how action is possible. It is clear that, at the least, mental states are dependent upon or supervene on brain states, but neither neuroscience nor any other science has demonstrated that mental states do not play an independent and partial causal role. Simply because we now know that water is divisible into two hydrogen and one oxygen atoms does not mean that it doesn’t have the property of wetness that none of its component parts has individually. This is, of course, the issue of emergence and reductionism in philosophy and science. Applied to our context, even if mental states depend crucially on brain states, mental states may have independent causal properties that brain states alone may not have, and they may not be reducible to brain states. These are immensely thorny issues and the responsibility skeptics need to address them in detail rather than simply assume that science has demonstrated that mental states are just brain states or that mental states do no work.

Despite our lack of understanding of the mind–brain–action relation, some scientists and philosophers question whether mental states have any causal effect, thus treating mental states as “psychic appendixes” that evolution has created but that have no genuine function. These claims are not strawpersons. They are made by serious, thoughtful people (e.g., Greene & Cohen, 2006). As discussed below, if accepted, they would create a complete and revolutionary paradigm shift in the law of criminal responsibility and competence (and more widely). Thus, this claim is an external critique and must be understood as such. Moreover, as the section “The radical neurochallenge” suggests, given our current state of knowledge, there is little scientific or conceptual reason to accept it (Morse, 2011a).

The limits of neurolaw: the present limits of neuroscience

Most generally, the relation of brain, mind, and action is one of the hardest problems in all science. Again, we have no idea how the brain

enables the mind or how action is possible. The brain–mind–action relation is a mystery, not in the sense that it depends on anything magical, but simply in the sense that it is so difficult to understand the relation. For example, to return to the Wittgensteinian example raised previously, we would like to know the difference between a neuromuscular spasm and intentionally moving one’s arm in exactly the same way. The former is a purely mechanical motion, whereas the latter is an action, but we cannot explain the difference between the two. We know that a functioning brain is a necessary condition for having mental states and for acting. After all, if your brain is dead, you have no mental states, are not acting, and indeed are not doing much of anything at all. Still, we do not know how mental states and action are caused.

Despite the astonishing advances in neuroimaging and other neuroscientific methods, we still do not have sophisticated causal knowledge of how the brain works generally, and we have little information that is legally relevant. This is unsurprising. The scientific problems are fearfully difficult. Only in the last fifteen years have researchers begun to accumulate much data from functional magnetic resonance imaging (fMRI), which is the technology that has generated most of the legal interest. Moreover, virtually no studies have been performed to address specifically legal questions.

Before turning to the specific reasons for neuromodesty, a few preliminary points of general applicability must be addressed. The first and most important is contained in the message of the prior section. Causation by biological variables, including abnormal biological variables, does not per se create an excusing or mitigating condition. Any excusing condition must be established independently. The goal is always to translate the biological evidence into the criminal law’s folk-psychological criteria.

Assessing criminal responsibility involves a retrospective evaluation of the defendant’s mental states at the time of the crime. No criminal wears a portable scanner or other neurodetection device that provides a measurement at the time of the crime, at least not yet. Further, neuroscience is insufficiently developed to detect specific, legally relevant mental content or to provide a sufficiently accurate diagnostic marker for even a severe mental disorder (Frances, 2009). Notably, the newest (fifth) edition, of the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2013) neither contains any biological criterion nor identifies any biomarker for mental disorders with just a few exceptions (e.g., neurocognitive disorders). Nonetheless, certain aspects of neural structure and function that bear on legally relevant capacities, such as the capacity for rationality and

control, may be temporally stable in general or in individual cases. If they are, neuroevidence may permit a reasonably valid retrospective inference about the defendant's rational and control capacities and their impact on criminal behavior. This will, of course, depend on the existence of adequate science to do this. We currently lack such science, but future research may provide the necessary data.

Questions concerning competence or predictions of future behavior are based on a subject's present condition. Thus, the problems besetting the retrospective responsibility analysis do not apply to such issues. The criteria for competence are functional. They ask whether the subject can perform some task – such as understanding the nature of a criminal proceeding or understanding a treatment option that is offered – at a level the law considers normatively acceptable to warrant respecting the subject's choice and autonomy.

Now, let us consider the specific grounds for neuromodesty in cognitive, affective, and social neuroscience, the sub-disciplines most relevant to law. At present, most neuroscience studies on human beings involve very small numbers of subjects, although this phenomenon is starting to change. Most of the studies have been done on college and university students, who are hardly a random sample of the population generally and of criminal offenders specifically. There is also a serious question of whether findings based on subjects' behavior and brain activity in a scanner would apply to real-world situations (the issue of "ecological validity"). Further, most studies average the neurodata over the subjects, and the average finding may not accurately describe the brain structure or function of any actual subject in the study. Replications are few, which is especially important for law. Policy and adjudication should not be influenced by findings that are insufficiently established, and replications of findings are crucial to our confidence in a result. Finally, the neuroscience of cognition and interpersonal behavior is largely in its infancy and what is known is quite coarse-grained and correlational, rather than fine-grained and causal (Miller, 2010). What is being investigated is an association between a condition or a task in the scanner and brain activity. These studies do not demonstrate that the brain activity is a sensitive diagnostic marker for the condition or either a necessary, sufficient, or predisposing causal condition for the behavioral task that is being done in the scanner. Any language that suggests otherwise – such as claiming that some brain region is the neural substrate for the behavior – is simply not justifiable based on the methodology of most studies. Moreover, activity in the same region may be associated with diametrically opposite behavioral phenomena – for example, love and hate.

There are also technical and research design difficulties. It takes many mathematical transformations to get from the raw fMRI data to the images of the brain that are increasingly familiar. Explaining these transformations is beyond me, but I do understand that the likelihood that an investigator will find a statistically significant result depends on how the researcher sets the threshold for significance. There is dispute about this, and the threshold levels are conventional. If the threshold changes, so does the outcome. I have been convinced by neuroscience colleagues that many such technical difficulties have largely been solved, but research design and potentially unjustified inferences from the studies are still an acute problem. It is extraordinarily difficult to control for all conceivable artifacts. Consequently, there are often problems of over-inference. Finally, it is also an open question whether accurate inferences or predictions about individuals are possible using group data when that group includes the individual (Faigman et al., 2014). This is a very controversial topic, but even if it is difficult or impossible now, it may become easier in the future. Over time, however, all these problems may ease as imaging and other techniques become less expensive and more accurate, research designs become more sophisticated, and the sophistication of the science increases generally.

Virtually all neuroscience studies of potential interest to the law involve some behavior that has already been identified as of interest, and the point of the study is to identify that behavior's neural correlates. Neuroscientists do not go on general "fishing" expeditions (but see Bennett et al., 2009, for an amusing counterexample). There is usually some bit of behavior – such as addiction, schizophrenia, or impulsivity – that investigators would like to understand better by investigating its neural correlates. To do this properly presupposes that the researchers have already identified and validated the behavior under neuroscientific investigation. Thus, neurodata can be no more valid than the behavior with which it is correlated.

On occasion, the neuroscience might suggest that the behavior is not well-characterized or is neurally indistinguishable from other, seemingly different, behavior. In general, however, the existence of legally relevant behavior will already be apparent before the neuroscientific investigation is begun. For example, some people are grossly out of touch with reality. If, as a result, they do not understand right from wrong, we excuse them because they lack such knowledge. We might learn a great deal about the neural correlates of such psychological abnormalities, but we already knew without neuroscientific data that these abnormalities existed, and we had a firm view of their normative significance. In the future, however, we may learn more about the causal link between the brain and

behavior, and studies may be devised that are more directly legally relevant. I suspect that we are unlikely to make substantial progress with neural assessment of legally relevant mental content, but we are likely to learn more about capacities that will bear on excuse or mitigation. Again, however, the neurodata must be genuinely and not rhetorically relevant to the law's folk-psychological criteria.

The criteria for both responsibility and competence are behavioral; therefore, actions speak louder than images. This is a truism for all criminal responsibility and competence assessments. If the finding of any test or measurement of behavior is contradicted by actual behavioral evidence, then we must believe the behavioral evidence because it is more direct and probative of the law's behavioral criteria. For example, if the person behaves rationally in a wide variety of circumstances, the agent is rational even if the brain appears structurally or functionally abnormal. We also confidently knew that some people were behaviorally abnormal – such as being psychotic – long before there were any psychological or neurological tests for such abnormalities.

An analogy from physical medicine may be instructive. Suppose someone complains about back pain, a subjective symptom, and the question is whether the subject actually does have back pain. We know that many people with abnormal spines do not experience back pain, and many people who complain of back pain have normal spines. If the person is claiming a disability and the spine looks dreadful, evidence that the person regularly exercises on a trampoline without difficulty indicates that there is no disability caused by back pain. If there is reason to suspect malingering, however, and there is not clear behavioral evidence of lack of pain, then a completely normal spine might be of use in deciding whether the claimant is malingering. Unless the correlation between the image and the legally relevant behavior is very powerful, however, such evidence will be of limited help.

If actions speak louder than images, however, what room is there for introducing neuroevidence in legal cases? Is criminal law completely immune to neuroscientific findings? Let us begin with cases in which the behavioral evidence is clear and permits an equally clear inference about the defendant's mental state. For example, lay people may not know the technical term to apply to people who are manifestly out of touch with reality, but they will readily recognize this unfortunate condition. No further tests of any sort will be necessary to prove that the subject suffers from seriously impaired rationality. In such cases, neuroevidence will be at most convergent and increase our confidence in what we already had confidently concluded. Determining if it is worth

collecting the neuroevidence will depend on whether the cost-benefit analysis justifies obtaining convergent evidence.

Roper v. Simmons (2005) is the most striking example of a case in which the behavioral evidence was clear. In *Roper* the United States Supreme Court categorically excluded the death penalty for capital murderers who killed when they were 16 or 17 years old on the grounds that adolescents do not deserve the death penalty. The amicus briefs were replete with neuroscience data showing that the brains of late adolescents are not fully biologically mature, and advocates used this data to suggest that adolescent killers could not fairly be put to death. Now, we already knew from common-sense observation and from rigorous behavioral studies that juveniles are on average less rational than adults. What did the neuroscientific evidence about the juvenile brain add? It was consistent with the undeniable behavioral data and perhaps provided a partial causal explanation of the behavioral differences. The neuroscience data was therefore merely additive and only indirectly relevant, and the Supreme Court did not cite it, except perhaps by implication when it referred vaguely to “other” scientific evidence. In two later cases dealing with the punishment of juvenile offenders, *Graham v. Florida* (2010) and *Miller v. Alabama* (2013), the Court did cite neuroscience in a general, conclusory way, but I believe these cases were fully controlled by the reasoning in *Roper* and that the use of neuroscience was dictum.

Whether adolescents are sufficiently less rational on average than adults to exclude them categorically from the death penalty is a normative legal question and not a scientific or psychological question. Advocates claimed, however, that the neuroscience confirmed that adolescents are insufficiently responsible to be executed, thus confusing the positive and the normative. The neuroscience evidence in no way independently confirms that adolescents are less responsible. If the behavioral differences between adolescents and adults were slight, it would not matter if their brains were quite different. Similarly, if the behavioral differences were sufficient for moral and constitutional differential treatment, then it would not matter if the brains were essentially indistinguishable.

If the behavioral data are not clear, then the potential contribution of neuroscience is large. Unfortunately, it is in just such cases that neuroscience at present is not likely to be of much help. I term the reason for this the “clear cut” problem (Morse, 2011b). Recall that neuroscientific studies usually start with clear cases of well-characterized behavior. In such cases, the neural markers might be quite sensitive to the already clearly identified behaviors precisely because the behavior is so clear. Less clear behavior is simply not studied, or the overlap in data about less

clear behavior is greater between experimental and control subjects. Thus, the neural markers of clear cases will provide little guidance to resolve behaviorally ambiguous cases of legally relevant behavior, and they are unnecessary if the behavior is sufficiently clear

For example, suppose that in an insanity defense case the question is whether the defendant suffers from a major mental disorder, such as schizophrenia. In extreme cases, the behavior will be clear, and no neurodata will be necessary. Investigators have discovered various small but statistically significant differences in neural structure or function between people who are clearly suffering from schizophrenia and those who are not. Although there is reason to be cautious about the validity of such studies (Ioannidis, 2011), but let us assume the validity for purposes of argument. In a behaviorally unclear case, however, the overlap between data on the brains of people with schizophrenia and people without the disorder is so great that a scan is insufficiently sensitive to be used for diagnostic purposes. In short, at present, in those cases in which the neuroscience would be most helpful, it has little to contribute. Again, this situation may change if neural markers become more diagnostically sensitive for legally relevant criteria.

Some people think that executive capacity – the congeries of cognitive and emotional capacities that help to plan and regulate human behavior – is going to be the Holy Grail to help the law determine an offender's true culpability. After all, there is an attractive moral case that people with a substantial lack of these capacities are less culpable, even if their conduct satisfied the prima facie case for the crime charged. Perhaps neuroscience can provide specific data previously unavailable to identify executive capacity differences more precisely.

There are two problems, however. First, significant problems with executive capacity are readily apparent without testing, and criminal law simply will not adopt fine-grained culpability criteria. Second, the correlation between neuropsychological tests of executive capacity and actual real-world behavior is not terribly strong (Barkley & Murphy, 2010). Only a small fraction of the variance is accounted for, and the scanning studies will use the types of tasks the tests use. Consequently, we are far from able to use neuroscience accurately to assess non-obvious executive capacity differences that are valid in real-world contexts.

The radical neurochallenge: are we victims of neuronal circumstances?

This section addresses the claim and hope alluded to earlier that neuroscience will cause a paradigm shift in criminal responsibility by

demonstrating that we are “merely victims of neuronal circumstances” (or some similar claim that denies human agency). This claim holds that we are not the kinds of intentional creatures we think we are. If our mental states play no role in our behavior and are simply epiphenomenal, then traditional notions of responsibility based on mental states and on actions guided by mental states would be imperiled. But is the rich explanatory apparatus of intentionality simply a post hoc rationalization that the brains of hapless *Homo sapiens* construct to explain what their brains have already done? Will the criminal justice system as we know it wither away as an outmoded relic of a prescientific and cruel age? If so, criminal law is not the only area of law in peril. What will be the fate of contracts, for example, when a biological machine that was formerly called a person claims that it should not be bound because it did not make a contract? The contract is also simply the outcome of various “neuronal circumstances.”

Given how little we know about the brain–mind and brain–action connections, to claim that we should radically change our conceptions of ourselves and our legal doctrines and practices based on neuroscience is a form of neuroarrogance. Although I predict that in the future we will see far more numerous attempts to use neuroscience in adjudication and law reform, I have elsewhere argued that for conceptual and scientific reasons, there is no reason at present to believe that we are not agents (Morse, 2008a, 2011b, 2013a). It is possible that we are not agents, but the current science does not remotely demonstrate that this is true. The burden of persuasion is firmly on the proponents of the radical view.

What is more, the radical view entails no positive agenda. Suppose we are convinced by the mechanistic view that we are not intentional, rational agents after all. (Of course, the notion of being “convinced” would be an illusion too. Being convinced means that we are persuaded by evidence or argument, but a mechanism is not persuaded by anything. A mechanism is simply neurophysically transformed.) What should we do now? We know that it is an illusion to think that our deliberations and intentions have any causal efficacy in the world. We also know, however, that we experience sensations – such as pleasure and pain – and care about what happens to us and to the world. We cannot just sit quietly and wait for our brains to activate, for determinism to happen. We must and will deliberate and act.

Even if we still thought that the radical view was correct and standard notions of genuine moral responsibility and desert were therefore impossible, we might still believe that the law would not necessarily have to give up the concept of incentives. Indeed, Greene and Cohen (2006) concede that we would have to keep punishing people for practical purposes.

Such an account would be consistent with “black box” accounts of economic incentives that simply depend on the relation between inputs and outputs without considering the mind as a mediator between the two. For those who believe that a thoroughly naturalized account of human behavior entails complete consequentialism, this conclusion might be welcomed.

On the other hand, this view seems to entail the same internal contradiction just explored. What is the nature of the agent that is discovering the laws governing how incentives shape behavior? Could understanding and providing incentives via social norms and legal rules simply be epiphenomenal interpretations of what the brain has already done? How do we decide which behaviors to reward or punish? What role does reason – a property of thoughts and agents, not a property of brains – play in this decision? And why would we call the intervention “punishment,” a term that has immense normative connotation?

If the truth of pure mechanism is a premise in deciding what to do, no particular moral, legal, or political conclusions follow from it (see Berman, 2008, which first suggested this line of thought to me). The radical view provides no guide as to how one should live or how one should respond to the truth of reductive mechanism. Normativity depends on reason and, thus, the radical view is normatively inert. If reasons do not matter, then we have no reason to adopt any particular morals, politics or legal rules, or to do anything at all.

Given what we know and have reason to do, the allegedly disappearing person remains fully visible and necessarily continues to act for good reasons, including the reasons currently to reject the radical view. We are not Pinocchios, and our brains are not Geppettos pulling the strings.

The case for cautious neurolaw optimism

Despite having claimed that we should be exceptionally cautious about the current contributions that neuroscience can make to criminal law policy, doctrine, and adjudication, I am modestly optimistic about the near and intermediate term contributions neuroscience can potentially make to our ordinary, traditional, folk-psychological legal system. In other words, neuroscience may make a positive contribution even though there has been no paradigm shift in thinking about the nature of the person and the criteria for criminal responsibility. The legal regime to which neuroscience will contribute will continue to take people seriously as people – as autonomous agents who may fairly be blamed and punished based on their mental states and actions.

In general, my hope is that over time there will be feedback between the folk-psychological criteria and the neuroscientific data. Each might inform the other. Conceptual work on mental states might suggest new neuroscientific studies, for example, and the neuroscientific studies might help refine the folk-psychological categories. The ultimate goal would be a reflective, conceptual-empirical equilibrium.

More specifically, there are four types of situations in which neuroscience may be of assistance: (1) data indicating that the folk-psychological assumption underlying a legal rule is incorrect, (2) data suggesting the need for new or reformed legal doctrine, (3) evidence that helps adjudicate an individual case, and (4) data that help efficient adjudication or administration of criminal justice.

Many criminal law doctrines are based on folk-psychological assumptions about behavior that may prove to be incorrect. If so, the doctrine should change. For example, it is commonly assumed that agents intend the natural and probable consequences of their actions. In many or most cases, it seems that they do, but neuroscience may help in the future to demonstrate that this assumption is true far less frequently than we think. In that case, the rebuttable presumption used to help the prosecution prove intent should be softened or used with more caution.

Second, neuroscientific data may suggest the need for new or reformed legal doctrine. For example, control tests for legal insanity have been disfavored for some decades because they are ill understood and hard to assess. It is at present impossible to distinguish “cannot” from “will not.” Perhaps neuroscientific information will help to demonstrate and to prove the existence of control difficulties that are independent of cognitive incapacities. If so, then perhaps independent control tests are justified and can be rationally assessed after all. More generally, perhaps a larger percentage of offenders than we currently believe have such grave control difficulties that they deserve a generic mitigation claim that is not available in criminal law today. Neuroscience might help us discover that fact. If that were true, justice would be served by adopting a generic mitigating doctrine. On the other hand, if it turns out that such difficulties are not so common, we could be more confident of the justice of current doctrine.

Third, neuroscience might provide data to help adjudicate individual cases. Consider the insanity defense again. As in *United States v. Hinckley* (1981), there is often dispute about whether a defendant claiming legal insanity suffered from a mental disorder, which disorder the defendant suffered from, and how severe the disorder was. At present, these questions must be resolved entirely behaviorally, and there is often room for considerable disagreement about inferences drawn from the defendant’s

actions, including utterances. In the future, neuroscience might help resolve such questions if the clear-cut problem difficulty can be solved. As mentioned previously, however, in the foreseeable future, I doubt that neuroscience will be able to help identify the presence or absence of specific *mens reas*.

Finally, neuroscience might help us to implement current policy more efficiently. For example, the criminal justice system makes predictions about future dangerous behavior for purposes of bail, sentencing, including capital sentencing, and parole. If we have already decided that it is justified to use dangerousness predictions to make such decisions, it is hard to imagine a rational argument for doing it less accurately if we are in fact able to do it more accurately. Validated behavioral prediction techniques already exist and should be used because they are more accurate than pure clinical judgment (Skeem & Monahan, 2011). The question is whether neuroscientific variables can add value by increasing the accuracy of such predictions considering the cost of gathering such data. Very recently, two studies have been published showing the potential usefulness of neural markers for enhancing the accuracy of predictions of antisocial conduct (Aharoni et al., 2013; Pardini et al., 2014). Although these must be considered preliminary, “proof of concept” studies, and a reanalysis of the Aharoni study demonstrated that the increase in accuracy beyond the behavioral measures was very small (Poldrack, 2013), it is perfectly plausible that in the future genuinely valid, cost-benefit justified neural markers will be identified, and thus, prediction decisions will be more accurate and just.

Responses to other chapters

Some of the chapters in this volume have addressed issues relevant to the argument I have presented. At the editor’s suggestion, I will comment briefly on most of these chapters in light of the argument my chapter presents. I will focus more heavily on Steven Hyman’s contribution, which addresses arguments that I have made specifically. My focus is on how one should think about the issues and about what the neuroscience contributes, if anything, to sensible resolution of them.

The central themes of my comments on all these chapters are, first, that they all deal with the folk-psychological concept of freedom rather than the metaphysical debate (although some are not entirely clear about the difference); second, the meanings of will and self-control are unsettled in both philosophy and science; and, third, neuroscience is unlikely in the near future to play a large role in resolving questions concerning folk-psychological freedom, the will, self-control, and responsibility.

De Haan et al.

Let us begin with the interesting contribution by de Haan et al. on the phenomenology of obsessive-compulsive disorder and what it teaches us about freedom of the will. The chapter is a contribution to the folk-psychological concept of freedom and not to the metaphysical debate. The metaphysical debate is all or none: either we have libertarian freedom or we don't as a result of how the universe "really is." How much conscious control – the authors' term – we have over our actions (and thoughts) is a folk-psychological issue. Conscious control is almost surely distributed on a continuum and how much we would need to be responsible is a normative question. Relatedly, I do not believe that neuroscience has demonstrated any worrisome limits on what we can consciously control if we have reason to exercise that control and no other excusing or mitigating condition is present.

The chapter's most general claim is that the extreme conscious control that sufferers from OCD exercise paradoxically diminishes their sense of agency and experience of freedom. But having such subjective self-impressions is a different issue from whether and how their freedom is in fact impaired. As I freely concede, genuine compulsion clearly diminishes freedom and people with OCD say that they are compelled to think certain thoughts or to do certain deeds. But "compelled" is a normative conclusion because OCD sufferers are not literally compelled. Suppose that a person whose major sign of OCD is compulsive handwashing were threatened with death if they yielded to a particular desire to wash. My hunch is that they wouldn't wash and thus that they could bring the action, although presumably not the desire, under conscious control if they had a good enough reason to exercise it. For all we know, it might be "easy" to control the impulse under these cruel conditions or it might be supremely difficult, but the action would be controlled. In most cases, however, we have very little valid, objective knowledge of how much conscious control an OCD sufferer has over his or her behavioral signs. Moreover, OCD sufferers are a heterogeneous lot. Are they compelled because the desire is so strong, the control mechanisms so weak, the motivation to control is lacking, or some combination of the three. It is almost impossible to tease out these variables independently and almost certainly the mix varies substantially among those with the disorder.

An interesting question is how much conscious control we could fairly expect OCD sufferers to have under what circumstances. In the following three examples, hold constant the intensity of the OCD. Imagine that a "compulsive" handwasher is with his or her spouse. They are enjoying quality time together – say, watching a television show they

both like – when he gets up to wash, thus disrupting the quality time. Now, imagine that they are having the “make it or break it conversation” about potentially ending the marriage. In the midst of this intense discussion, he gets up to wash, interrupting his spouse in the midst of an important issue. In the third example, they are having dinner together and a chicken bone becomes lodged in her esophagus and threatens to asphyxiate her. The handwasher knows the Heimlich maneuver but gets up to wash and she dies. Remember: hold everything about the disorder and the sufferer otherwise constant. I think we would have a very different set of reactions. In the first case, the spouse would be disappointed but forgiving. In the second, the spouse might be genuinely indignant. In the third, we would expect much more from the handwasher and might indeed morally and legally condemn him for failing to exercise a capacity he should have exercised, albeit it would have been very hard for him to do so.

My preference is to treat impulse control problems as rationality problems. For the OCD sufferers, the intrusiveness of unwanted thoughts or the urgency of unwanted, strong desires interferes with their ability to bring reason to bear. In fact, in my view, this is the best explanation for “self-control” problems in most cases, but I am special pleading.

A last general observation about this chapter is a question about how far we can generalize about conscious control based on an analysis of the folk-psychological phenomenology of people with OCD.

Foquaert et al.

I have little to say about the excellent psychopathy chapter that uses a reasons-responsive model pioneered by Fischer and Ravizza to consider whether psychopaths should be held morally and legally responsible. This model is very close to the one I proposed in the main part of this chapter and therefore is a contribution to the folk-psychological conception of freedom rather than to the metaphysical debate.

In the chapter’s introduction, they do imply that new discoveries about the neuroscience and genetics of psychopathy cast doubt on free will, but this is not true about either the metaphysical or the folk-psychological/compatibilist view. The metaphysical debate is, well, metaphysical, and scientific discoveries are not going to prove or disprove that we have libertarian freedom. As I said in the main body of my chapter, neurodeterminism or genodeterminism are simply the newest kids on the incompatibilist block. Nor will such discoveries cast doubt on the folk-psychological account of freedom and responsibility. We now have

genetic and neuroscientific understanding of psychopathy because the condition was already well-characterized behaviorally and it is the behavior – mental states and actions – that are crucial for assessing freedom and responsibility. We know that some psychopaths totally lack empathy and conscience. Whether this should be a responsibility diminishing condition because it is a type of rational incapacity that bears on responsibility is a normative, not a scientific, question. And, since actions speak louder than images, even if we cannot find the neural correlates of empathy or its lack, we must believe the behavioral evidence.

For the record, I do argue elsewhere in agreement with this chapter that the psychological features of psychopathy, including lack of genuine moral sense, conscience, and empathy, should be responsibility diminishing because psychopaths lack rational moral agency (Morse, 2008b). These functional incapacities are doing the moral work, whether or not they are signs or symptoms of a disorder. Simply finding neural or genetic correlates or even causes for these incapacities does not entail that the condition is a disease. All behavior has brain and genetic causes. Although I believe that psychopathy is best characterized as a mental disorder and not a bad moral character, the moral argument is not hostage to a disease model and thus is not undermined by those who claim psychopathy is not a disorder. Even if it is not, some people have these functional incapacities through no fault of their own, and I believe their responsibility should be mitigated or excused if they commit immoral acts.

Meynen

This chapter is concerned with the question of how mental disorder affects the will. Although it gestures at the metaphysical problem, it is really a contribution to the folk-psychological account because if we don't have libertarian freedom, we don't, and no specific condition such as mental disorder affects this outcome. The chapter also claims that it is a matter of debate whether "free will has to do with criminal responsibility," but, with respect, it is not a matter of debate at the doctrinal level because libertarian freedom or its lack is not a criterion of any criminal law doctrine. At the most, one can argue that this type of freedom is foundational, but as the main body of the chapter demonstrates, criminal responsibility doctrines and practices are fully consistent with the truth of determinism.

The chapter's main difficulty is that it fails to provide an adequate conceptual or empirical account of what the will is. But this is a notoriously difficult problem in the philosophy of mind and action. Still more

clarity on this point would have aided a reader's engagement with the arguments. In any case, the concept of the will envisioned is folk-psychological, and not a reduced neurophysiological mechanism. Of course, depression can make a sufferer generally avolitional, but specifying how this is different from not forming a desire in the first place is important.

Most of the examples the chapter uses to show how mental disorder can affect responsibility involve problems with rationality, e.g., psychosis, failure to integrate information in patients with delirium, alteration of decision-making rationality among some drug addicts. If the will is treated as an executory capacity – a volition in Michael Moore's terms (Moore, 1993), then a psychotic person who acts in response to his or her delusional beliefs or in response to a hallucination or who yields to a compulsive desire has a fully functioning will that executes their intentions (Fingarette & Hasse, 1979). The problem is not the will; it is rational capacity. If one wants to talk about failures of self-control, then the folk-psychological process by which this occurs needs to be specified. Saying that the person's will was undermined is simply a definitional stop that doesn't explain why the person "cannot" as opposed to "will not" control himself when there is apparently good reason to do so, as in cases of addiction. When the noted addiction researcher, Nora Volkow, whom the chapter quotes, claims that changes in the addict's brain undermine free will, what she is really referring to is the rationality of folk-psychological decision-making. One could do the same type of analysis with virtually all the clinical conditions the chapter reviews.

Most psychiatric conditions do not deprive the agent of the choice of how to act. People who experience command hallucinations do not have to obey them, and if they do, the will executes their intention very well. Suppose someone heard a voice tell them to commit a mass murder? How do we know that they could not but obey? If they complied, then the excusing condition would be lack of rational capacity, not a problem with the will. Even the absence of genuine choice does mean an action is necessarily "unfree." When Martin Luther said, "Here I stand; I can do no other," it was true that he believed he had no option and that tacking the theses to the church door was nonetheless a magnificent exercise of freedom. There was no lack of rational capacity and no normative compulsion.

I understand why coercion and manipulation may be excusing conditions, but it is unclear why not being "oneself" should also excuse or why any of these is a problem of the will. The chapter uses the example of a hypomanic person who is different from who he or she is when not in the hypomanic state. I applaud this example because I have written,

including in the main body of this chapter, about the hypomanic armed robber in which the psychiatric condition plays a but-for role in producing armed robbery. Again, there is no problem with executory intentions, and I suggest that rational incapacity is doing the excusing work if it should be done at all. After all, many people do things “out of character” when they are stressed or the like, but we would not excuse them for wrongful behavior unless they became functionally impaired. It is the functional impairment that is crucial.

Hall & Carter

This chapter concerning the responsibility of addicts, by two distinguished addiction researchers, accurately covers the debate between those who claim that addiction is a chronic and relapsing brain disease and those who claim that it is best understood as a condition marked by voluntary but difficult choices. It also usefully surveys the literature on whether involuntary treatment for addiction is justified. I have written extensively on the question of the responsibility of addicts for actions related to their addiction (Morse, 2000, 2011c, 2013c) and wish in this brief comment to address only problems related to the central themes of this volume.

This chapter is once again addressed to the folk-psychological conception of freedom and responsibility, but it blurs the distinction between the metaphysical and the folk-psychological accounts by referring to the views of leading “voluntarists” such as Gene Heyman and Herbert Fingarette as “libertarian.” This seems to suggest that these writers have a position requiring libertarian freedom in the metaphysical debate, but this is not true. Neither enters the metaphysical jousting. Their analyses are firmly folk-psychological, suggesting only that addicts do have the capacity to make uncompelled decisions in the folk-psychological sense about whether and how much to use substances and they are not “slaves” to their addictive desires to use substances. Neither relies on a metaphysical libertarianism.

The chapter is straightforwardly concerned with folk-psychological responsibility, so the folk-psychological facts about addicts are important. If addicts lack rational capacities or have control difficulties, they may seem less responsible than if these characterizations are false. Heyman’s book on addiction (2009) pointed out that the epidemiological evidence about remission from addiction *without* treatment is inconsistent with the brain disease model of addiction. The vast majority of addicts simply stop using substances and no longer meet the criteria for addiction, albeit often after failed attempts, when they have a subjectively

good enough reason to do so. The findings were criticized on numerous grounds, but Heyman effectively answered his critics in a more recent reanalysis (2013). His findings stand.

It is true that many addicts ruin their lives and the lives of others they profess to care about and that they have had multiple failed attempts to quit. The inference is that they are unable to quit, a conclusion bolstered by the neuroscientific finding that the reward circuits in addicts are negatively altered and by self-report that they can't help themselves. The problem, however, is that the studies of relapse and the neuroscientific studies are all done on addicts who are in treatment for addiction, and these addicts are not a representative sample of addicts. They are disproportionately co-morbid. That is, they suffer from other mental disorders as well as addiction, and it is impossible to know from this sample of addicts whether relapse is a product of addiction alone, the other disorder, or an interactive combination of the two.

The relation between addiction and responsibility is extremely complicated on any account, and it may vary according to the actions an addict performs. As Steven Hyman notes in an article the chapter quotes, addicts are not automatons. They are acting people. For example, one might argue that there is a more justifiable theory for mitigation and excuse for possession for personal use than for committing serious crimes against others to obtain the money needed to buy the substances. The reasons to forgo the latter crimes are much stronger than the reasons to forgo personal use, and addicts are responsive to reason. Rates of use and addiction vary with availability and price.

I believe that it is often the case that addicts cannot be adequately guided by reason at moments of peak desire when they can think of virtually nothing else except satisfying their desires. This may be especially true when their illegal actions are simply purchase or possession for personal use, when other-regarding reasons to abstain may be less strong. This is a rationality problem, which is a classic mitigating or excusing condition, and I find it very attractive. Nonetheless, the case for mitigation and excuse founders on the shoals of diachronous responsibility. When addicts are quiescent and not assaulted by persistent, intense urges, they are capable of rational thought unless their rational capacities are disabled for some other reason. At that point, they are capable of taking the steps necessary to avoid future trouble when they are in the state of peak desire again. The addict's self-assurance that he won't use today or anymore can only work a few times before the "denial" excuse can no longer obtain. He will have to take stronger steps to avoid trouble, and if he doesn't, he will be

responsible for what he irrationally does later because he was responsible for failing to take those steps when he was capable of rational action.

Hyman

If I understand it correctly, this chapter suggests that science has demonstrated that agency is an illusion, but that this illusion is so central to our experienced lives that it cannot be abandoned. It recommends that we adopt “double vision,” recognizing when we are in the lab that agency is an illusion, but ignoring this hard fact when we are outside the lab. It suggests that we do this without resorting to the comforts of compatibilism, which is treated as a sleight of hand. Thus, the chapter claims both that science has demonstrated that we do not have libertarian freedom and that we really are not agents who act for and can be guided by reasons. I fully agree that libertarian freedom is theoretically impossible, although science has not proven that this is so.

As is apparent from the main body of the chapter, however, I firmly disagree with the claims that compatibilism is a sleight of hand and that agency is an illusion. As Vargas argues (2013), rejecting compatibilism requires a lot of very hard philosophical work; it simply cannot be waved away. Indeed, the metaphysical arguments in its favor become ever more nuanced and sophisticated (e.g., Vihvelin, 2013). I concede that the truth of compatibilism has not been conclusively demonstrated – and cannot be – but it is the dominant view of experts in the field who are well-acquainted with the scientific worldview and with the empirical advances in biology and other sciences relevant to human behavior. Now, any writer is entitled to reject compatibilism as an asserted premise, but that isn’t an argument. It is not contra-causal freedom that is “saved” by compatibilism, as the chapter incorrectly suggests. What is saved is the possibility of robust responsibility as long as it is true that people have agency.

The chapter is on firmer argumentative ground in denying the truth of agency, but the science doesn’t remotely support this assertion and it denies common sense. Perhaps we all truly are mere victims of neuronal circumstances, as Greene and Cohen assert (2006) but do not prove (and why is the neuronal level of explanation the right one if one is being reductionist?). But given common sense and the importance of agency to experienced living, the burden of persuasion is clearly on the agency-skeptics and they haven’t begun to meet it. It seems to me that the more sensible scientific stance towards agency is to try to explain how it is possible rather than to explain it away reductionistically. After all, to

date, the inter-theoretic reductionist project has been a dismal failure, even in the allegedly easiest cases such as the reduction of chemistry to physics. And, again, why should the biological level be the most sensible reduction? Why isn't everything reducible to physics? Why is there a field of chemistry or biology? If the answer is that the biological level is the most explanatory and useful to explain human behavior, then it's not reduction that is doing the work, but a pragmatic argument about levels of explanation. In that case, it is an open empirical and conceptual questions about which level of explanation is the most valuable for any particular phenomenon.

The chapter's section on punishment misconstrues retributivism. Although it may have its "evolutionary" roots in the expression of moral outrage and the suppression of free riding (Oldenquist, 1988), retributivism is fundamentally a theory of deontological justice. It is good in itself to give people what they deserve. Numerous studies, some of which the chapter cites, confirm that people are "instinctive" retributivists, but retributive theorists can take scant comfort from this because it does not provide a theoretical, normative justification. "Instincts" may be erroneous or undesirable. Further, it is not clear that ordinary people are metaphysical libertarians who believe that blame and punishment are foundationally based on strong free will. Most people have no clear understanding of what they mean by free will, including many educated people such as lawyers and judges.

The chapter is correct to conclude, however, that moral judgment is central to our lives and consistent with what we know neurobiologically and psychologically. Indeed, this conclusion seems inconsistent with the prior claim that agency is an illusion.

The section of the chapter devoted to neurobiology and the law flatteringly uses my work as an exemplar for the position that at present neuroscience has little to add to adjudication of criminal responsibility and legal policy. This section is admirably cautious about how much we know today that is legally relevant, and it properly recognizes the importance of genuine blaming doctrines and practices within the criminal law if justice is to be done. The underlying assumption, however, is that the increasing discovery of biological causal mechanisms is inconsistent with agency and at some point will cause our sense of agency to wither away, although not just yet. But this assumption raises the question of what science will demonstrate. If my claim is correct that the task of science is to explain how genuine agency is possible, then the discoveries of science may reinforce our sense of agency and the moral and legal practices that flow therefrom.

The chapter misreads my position to some degree. I do think that current doctrine and practice is consistent with the findings of

neuroscience (and other sciences), but I do not think that legal doctrine and practice are insulated from the causal understanding science produces. As I have argued repeatedly in my writings, if science indicates that factual premises used in our moral and legal responsibility ascriptions are false, then the doctrines and practices should change. Moreover, neuroscience and other sciences might help us better characterize the folk-psychological capacities relevant to responsibility. Recall that in the main body of the chapter and in many previous writings, I argued for an interactive process between the psychological and biological realms of explanation to help refine both and to achieve a conceptual-empirical equilibrium. Thus, I agree with the chapter in this regard. But responsibility is about actions and mental states, so the science will have to demonstrate, for example, that offenders in individual cases do not have the agentic capacities we may otherwise think they have or that people in general do not have certain capacities crucial to current responsibility ascriptions. If this occurs, the science will help the law become more just in individual cases and more generally.

Contra the chapter's assertion, my position does not secretly adopt dualism to wall off responsibility practices from science. I do assume that mental states play a partial but crucial role in explaining human action and that mental states are enabled by the brain in interaction with the environment (Noe, 2009), although at present we have almost no idea how this happens. Science is of course relevant to legal doctrine and practice, but only if it teaches us something about the acting human person. Mental states and actions are the stuff of responsibility and actions speak louder than images.

Of course the criminal law should pay the closest attention to the new, causal discoveries being made by many of the mechanistic sciences, such as neuroscience, but discovering causes does not entail that we are not agents as the chapter seems to suggest (and most of what we know neuroscientifically about behavior is correlational, not causal). Once again, until and unless science demonstrates that we do not have the agentic capacities we are fully entitled to believe we have, criminal responsibility doctrines and practices have a firm foundation without any magical assumptions being made.

Conclusion

At present, neuroscience has little to contribute to more just and accurate criminal law decision-making concerning policy, doctrine, and individual case adjudication. This was the conclusion reached when I tentatively identified "Brain Overclaim Syndrome" eight years ago, and it remains

true today. In the future, however, as the philosophies of mind and action, and neuroscience mutually mature and inform one another, neuroscience will help us understand criminal behavior. Although no radical transformation of criminal justice is likely to occur, neuroscience can inform criminal justice as long as it is relevant to law and translated into the law's folk-psychological framework and criteria.

REFERENCES

PRIMARY MATERIALS

- Graham v. Florida*, 130 S Ct 2111 (2010).
Miller v. Alabama, 132 S. Ct. 2455 (2013).
Roper v. Simmons 543 US 551 (2005).
United States v. Hinckley, 525 F Supp 1342 (DDC 1981).

SECONDARY MATERIALS

- Aharoni, Eyal, G. Vincent, C. Harenski, V. Calhoun, W. Sinnott-Armstrong, et al. (2013). "Neuroprediction of Future Arrest," *PNAS* 110, 6223–6228.
- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th edn. DSM-5). Arlington, VA: American Psychiatric Association.
- Barkley, Russell A., and Kevin R. Murphy (2010). "Impairment in Occupational Functioning and Adult ADHD: The Predictive Utility of Executive Function (EF) Ratings versus EF Tests," *Archives of Clinical Neuropsychology* 25, 157–173.
- Bennett, C. M., A. Baird, M. Miller, and G. Wolford (2009). "Neural Correlates of Interspecies Perspective Taking in the Post-mortem Atlantic Salmon: An Argument for Multiple Comparisons Correction," *Journal of Serendipitous and Unexpected Results* 1, available at <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.161.8384>. [order.]
- Bennett, Max R., and Peter M. S. Hacker (2003). *Philosophical Foundations of Neuroscience*. Maiden, MA: Blackwell.
- Berman, Mitchell (2008). "Punishment and Justification," *Ethics* 118, 258–290.
- Caspi, Avshalom, J. McClay, T. Moffitt, J. Mill, J. Martin, et al. (2002). "Role of Genotype in the Cycle of Violence in Maltreated Children," *Science* 297, 851–854.
- Doherty, Brian (2007). "You Can't See Why on an FMRI: What Science Can and Can't Tell Us About the Insanity Defense," *Reason* (July), available at <http://reason.com/archives/2007/06/19/you-cant-see-why-on-an-fmri>.
- The Economist (2002). "The Ethics of Brain Sciences: Open Your Mind," *The Economist* 23 (May 23), available at www.economist.com/node/1143317/print.
- Faigman, David L., John Monahan, and Christopher Slobogin (Forthcoming). "Group to Individual Inference (G2i) in Scientific Expert Testimony," *University of Chicago Law Review* 81.

- Feldman, Robin (2009). *The Role of Science in Law*. New York: Oxford University Press.
- Fingarette, Herbert, and Ann Fingarette Hasse (1979). *Mental Disabilities and Criminal Responsibility*. Berkeley: University of California Press.
- Fodor, Jerry A. (1989). *Psychosemantics: The Problem of Meaning in the Philosophy of Mind*. Cambridge, MA: MIT Press.
- Frances, Allen (2009). "Whither DSM-V?" *British Journal of Psychiatry* 195, 391–392.
- Greene, Joshua, and Jonathan Cohen (2006). "For the Law, Neuroscience Changes Nothing and Everything," in *Law and the Brain* (S. Zeki and O. Goodenough eds.). New York: Oxford University Press, 207–226.
- Heyman, Gene (2009). *Addiction: A Disorder of Choice*. Cambridge, MA: Harvard University Press.
- (2013). "Quitting Drugs: Qualitative and Quantitative Features," *Annual Review of Clinical Psychology* 9, 29–59.
- Ioannidis, John P. A. (2011). "Excess Significance Bias in the Literature on Brain Volume Abnormalities," *Archives of General Psychiatry* 68, 773–780.
- McHugh Paul R., and Phillip R. Slavney (1998). *The Perspectives of Psychiatry* (4th edn.), Baltimore, MD: Johns Hopkins University Press.
- Miller, Gregory A. (2010). "Mistreating Psychology in the Decades of the Brain," *Perspectives on Psychological Science* 5, 716–743.
- Monahan, John, H. Steadman, E. Silver, P. Appelbaum, P. Clark Robbins, et al. (2001). *Rethinking Risk Assessment: The MacArthur Study of Mental Disorder and Violence*. Cambridge, MA: Oxford University Press.
- Moore, Michael S. (1993). *Act and Crime: The Theory of Action and Its Implications for Criminal Law*. Cambridge, MA: Oxford University Press.
- Morse, Stephen J. (1994). "Culpability and Control," *University of Pennsylvania Law Review* 142, 1587–1660.
- (2000). "Hooked on Hype: Addiction and Responsibility," *Law & Philosophy* 19, 3–49.
- (2002). "Uncontrollable Urges and Irrational People," *Virginia Law Review* 18, 1025–1078.
- (2004). "New Neuroscience, Old Problems," in *Neuroscience and the Law: Brain, Mind and the Scales of Justice* (B. Garland ed.). New York: Dana Press, 157–198.
- (2006a). "Brain Overclaim Syndrome: A Diagnostic Note," *Ohio State Journal of Criminal Law* 3, 397–412.
- (2006b). "Moral and Legal Responsibility and the New Neuroscience," in *Neuroethics in the 21st Century: Defining the Issues in Theory, Practice and Policy* (J. Illes ed.). Oxford University Press, 33–50.
- (2007a). "Criminal Responsibility and the Disappearing Person," *Cardozo Law Review* 28, 2545–2575.
- (2007b). "The Non-Problem of Free Will in Forensic Psychiatry and Psychology," *Behavioral Sciences & the Law* 25, 203–220.
- (2008a). "Determinism and the Death of Folk Psychology," *Minnesota Journal of Law, Science & Technology* 9, 1–36.
- (2008b). "Psychopathy and Criminal Responsibility," *Neuroethics* 1, 205–212.

- (2009). "Neuroethics," in *Psychiatric Ethics* (4th edn., S. Bloch and S. Green eds.). Oxford University Press, 309–335.
- (2011a). "Lost in Translation?: An Essay on Law and Neuroscience," in *Law and Neuroscience* (Michael Freeman ed.). Oxford University Press, 529–562.
- (2011b). "Neuroscience and the Future of Personhood and Responsibility," in *Constitution 3.0: Freedom and Technological Change* (J. Rosen and B. Wittes eds.). Washington, DC: Brookings Institution, 113–129.
- (2011c). "Addiction and Criminal Responsibility," in *Addiction and Responsibility* (J. Poland & G. Graham eds.). Cambridge, MA: MIT Press, 159–199.
- (2012). "Neuroimaging Evidence in Law: A Plea for Modesty and Relevance," in *Neuroimaging in Forensic Psychiatry* (J. Simpson ed.). Chichester, West Sussex: Wiley-Blackwell, 341–357.
- (2013a). "Brain Overclaim Redux," *Law & Inequality* 31, 509–534.
- (2013b). "Preventive Detention of Psychopaths and Dangerous Offenders," in *Handbook on Psychopathy and Law* (K. Kiehl and W. P. Sinnott-Armstrong eds.). New York: Oxford University Press, 321–345.
- (2013c). "A Good Enough Reason: Addiction, Agency and Criminal Responsibility," *Inquiry* 156, 490–518.
- Noe, Alva. (2009). *Out of Our Mind: Why You Are Not Your Brain, and Other Lessons from the Biology of Consciousness*. New York: Hill & Wang.
- Oldenquist, Andrew. (1988). "An Explanation of Retribution," *Journal of Philosophy* 85, 464–478.
- Pardini, Dustin A., A. Raine, K. Erickson, and R. Loeber (2014). "Lower Amygdala Volume in Men Is Associated with Childhood Aggression, Early Psychopathic Traits, and Future Violence," *Biological Psychiatry* 75, 73–80.
- Pardo, Michael S., and Dennis Patterson. (2013). *Minds, Brains and Law: The Conceptual Foundations of Law and Neuroscience*. New York: Oxford University Press.
- Poldrack, Russell. (2013). "How Well Can We Predict Future Criminal Acts from fMRI Data?," *Russpoldrack.org* (April 6), available from www.russpoldrack.org/search?q=aharoni.
- Skeem, Jennifer, and John Monahan. (2011). "Current Directions in Violence Risk Assessment," *Current Directions in Psychological Science* 20, 38–42.
- Stone, Alan A. (1984). *Law, Psychiatry, and Morality*. Washington, DC: American Psychiatric Press.
- Vargas, Manuel. (2013). "If Free Will Doesn't Exist, Neither Does Water," in *Exploring the Illusion of Free will and Moral Responsibility* (G. D. Caruso, ed.). Lanham MD: Lexington Books, 177–202.
- Vihvelin, Kaadri. (2013). *Causes, Laws, and Free Will: Why Determinism Doesn't Matter*. Oxford University Press.
- Wallace, Jay. (1994). *Responsibility and the Moral Sentiments*. Cambridge, MA: Harvard University Press.
- Wittgenstein, Ludwig. (1991). *Philosophical Investigations* (3rd edn.). Somerset, NJ: Wiley-Blackwell.