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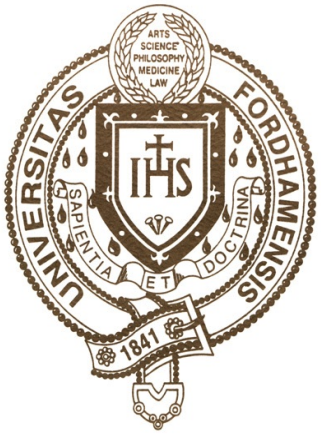
Consciousness and Culpability in American Criminal Law

Deborah W. Denno
Fordham University School of Law, ddenno@law.fordham.edu

Fordham University School of Law



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By

DEBORAH W. DENNO
ARTHUR A. MCGIVNEY PROFESSOR OF LAW

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Lecturer: Deborah W. Denno, Professor, School of Law, Fordham University

Interpreter: Mari Hirayama, Assistant Professor, School of Law, Hakuoh University

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CONSCIOUSNESS AND CULPABILITY IN AMERICAN CRIMINAL LAW

Deborah W. Denno*

INTRODUCTION

Good evening. I greatly appreciate the opportunity to visit Waseda University and to speak about some of my recent academic work. I am indebted to Professor Setsuo Miyazawa for inviting me to come. Professor Miyazawa's visit to Fordham Law School this past semester was one of Fordham University's academic highlights and everyone at Fordham was grateful that Professor Miyazawa could spend time with us. We learned so much from him. It is also an incredible honor for me to have Professor Norio Takahashi host my speech at Waseda University. Professor Takahashi's extensive preparation and organization have been superb. In addition, I thank Professor Mari Hirayama for all the talent and attention that she has devoted to interpreting my talk. I can only imagine the kind of skill that such an effort requires.

I will be speaking tonight about a new body of groundbreaking research that analyzes the science of *consciousness*, a term that typically refers to the sum of a person's thoughts and feelings and sensations, as well as the culture and everyday circumstances in which those thoughts and feelings and sensations are formed. Research on consciousness has been a source of great interest to a wide range of disciplines except for one – law. I hope to show how consciousness research can enlighten American criminal law, and in particular the criminal law's voluntary act requirement.

All criminal liability is based on one key predicate: A defendant's guilt must be based on conduct, and that conduct must include a voluntary act or an omission to engage in a voluntary act that the defendant is physically capable of performing. This bedrock principal has existed for over three centuries, based on the maxim that civilized societies do not criminally punish individuals for their thoughts alone. Basically, the criminal law recognizes that we can't identify anyone's thoughts or predict whether antisocial behavior will result from them. And thank goodness for that or we would all be in big trouble!

Generally speaking, every crime must have two key components: First, the *mens rea*, which refers to the defendant's mental state at the time she commits the crime; and second, the *actus reus*, which refers to the defendant's voluntary act that causes the social harm. For example, if A intentionally picks up a gun and shoots B, A has performed a voluntary act (shooting B) that caused B's death (the social harm), and she did so intentionally (the mental state).

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* Arthur A. McGivney Professor of Law, Fordham University School of Law. This essay was the basis of a talk presented at Waseda University on June 19, 2009. The substance of the essay relies on arguments and research first published in Deborah W. Denno, *Crime and Consciousness: Science and Involuntary Acts*, 87 MINNESOTA LAW REVIEW 269 (2002). As noted, I thank Setsuo Miyazawa, Norio Takahashi, and Mari Hirayama for their incredible hospitality and assistance. I also appreciate Julie Salwen's very helpful comments. Fordham University School of Law provided generous research support, for which I am grateful.

The criminal law presumes that most human behavior is voluntary and that individuals are consciously aware of their acts. On the other hand, the criminal law also presumes that individuals who act unconsciously, such as sleep walkers are not acting at all. Under the criminal law's voluntary act requirement, unconscious individuals can be totally acquitted and set free from the criminal justice system even if their behavior resulted in a serious harm.

I think that American criminal law's traditional dual dichotomies of voluntary and involuntary, conscious and unconscious no longer fit with what modern science has told us about the human mind. In other words, the law's attempt to shoehorn voluntariness into all-or-nothing, either/or concepts, is based on the philosophy and science of a bygone era.

New neuroscientific research has revealed a far more fluid and dynamic relationship between conscious and unconscious processes. If such fluidity exists, and the scientific evidence suggests that it does, much of human behavior is not voluntary or unconscious in the either/or way that the voluntary act requirement presumes. You can immediately see that this finding goes to the heart of one of the most fundamental features of the criminal law.

THE LEGAL COMPONENTS OF CONSCIOUSNESS

This clash between law and science over the issue of voluntariness is most apparent when we look at the Model Penal Code. Many law professors view the Model Penal Code as the principal text in teaching criminal law because the Code's impact has been so dramatic. Before the 1950s, state criminal codes were notoriously inconsistent, archaic, and unprincipled. Then, in 1952, the American Law Institute came to the rescue. The Institute's membership of judges, lawyers, and academics began to draft a model penal code to inspire state legislatures to reform their laws.

In 1962, after many drafts, explanatory commentaries, and commentaries on commentaries, the Institute published a final Official Draft of the Model Penal Code. That draft contained provisions pertaining to the general principles of criminal responsibility as well as the definitions of specific offenses. What was crucial was that the people who created the Code tried to reflect the best science of their times. Unfortunately, though, the Model Penal Code has never been sufficiently updated. Science moves on, but in this case the law has not.

Of course, the Model Penal Code incorporated a version of the voluntary act requirement. A striking feature of that version of the requirement is that it never defines the term "voluntary." Instead, it provides four examples of acts that are not voluntary. Those four acts are (1) a reflex or convulsion; (2) a bodily movement during unconsciousness or sleep; (3) conduct during hypnosis or resulting from hypnotic suggestion; and (4) a bodily movement that otherwise is not a product of the effort or determination of the actor, either conscious or habitual. The Code explains that these examples emphasize conduct that is not within the control of the actor, but is otherwise vague.

Another striking feature of the voluntary act requirement is that it can apply either to the

defendant's mental state or to the defendant's acts. In other words, it can apply to either the *mens rea* or the *actus reus* elements of a crime. Generally, courts have adopted the term *unconsciousness* to refer to the defendant's claim that she lacked the mental state to have committed the crime and they have adopted the term *automatism* to refer to the defendant's claim that she didn't engage in a voluntary bodily movement. Therefore, the defense of *unconsciousness* can be distinct from the defense of *automatism* even though both are defenses to the claim that the defendant acted voluntarily.

For example, individuals who suffer from a disorder called Limbic Psychotic Trigger Reaction claim that they are totally conscious and aware when they commit motiveless acts of violence against other individuals. But, they have no control over their bodily movements and they are extremely remorseful afterwards. They could have the defense of *automatism* but not the defense of *unconsciousness*. In contrast, individuals in the throws of an epileptic seizure also have no control over their bodily movements, but they are unconscious as well. If their movements result in harm to others, they could have both the defense of *automatism* and the defense of *unconsciousness*.

Unfortunately, all these doctrinal roadmaps can be dangerously confused and conflated with the insanity defense. This is where the real injustice to a defendant lies. For example, some courts have held that automatism and unconsciousness are defenses that are distinct from the insanity defense, while other courts have held that automatism and unconsciousness are a species of the insanity defense. This confusion can arise in cases, say, involving epilepsy or sleepwalking, where some courts will say sleepwalkers and epileptics were insane when they committed their acts whereas other courts will say they have a defense that is separate from insanity. While the courts are nearly split on this issue, the difference between the two is critical. Conceptually, automatism and unconsciousness can be distinguished from insanity in two important respects: Defendants with automatism or unconsciousness may not have a mental disease or defect, and they don't face the possibility of being institutionalized because they receive an unqualified acquittal.

Now all this may sound very academic, but the all-or-nothing approach to the voluntary act requirement has had real effects in criminal cases. For criminal defendants in the United States, it can mean the difference between unqualified acquittal if they are found to have acted involuntarily, lengthy institutionalization if they are found to be insane, and possibly even the death penalty or lengthy incarceration if their acts are found to be voluntary. My research has shown that one key reason the Model Penal Code is constructed this way is because of the effect of Freudian psychoanalytic theory on some of the Model Penal Code advisors. Yet Freud's own views were that the relationship between conscious and unconscious processes is far more complex and permeable than the Model Penal Code acknowledges.

Even if the Model Penal Code had successfully captured Freud in all his complexity, over the last four decades the status of psychoanalysis as a science has been seriously undermined, despite the power of the psychoanalytic establishment. My argument is that modern science has changed the landscape fundamentally. There has been a seismic shift in the scientific community and the law has yet to catch up.

THE SCIENTIFIC COMPONENTS OF CONSCIOUSNESS

Since the 1970s, enormous strides have been made in the study of how the conscious and unconscious mind works. Most of this new research has dispensed with Freudian psychoanalytic concepts and theories. Rather confusingly, the terms "conscious" and "unconscious" are still used in this new science, but the ideas behind these terms have changed fundamentally.

Much of the modern scientific controversy over consciousness concerns its definition or whether it should even be defined at all. For purposes of my talk, I'll rely on some of the more common definitions. According to one view, "consciousness" is "the subjective quality of experience," the sum of one's thoughts, feelings, sensations, and circumstances. Subjective self-awareness, or what we call "I," is "the inner picture we each have of what it is like to be ourselves," the "inner eye." You have your consciousness and I have mine. We don't really know what it's like to experience each other's "inner picture" unless we can jump into each other's heads. What a terrifying life that would be! These modern, non-Freudian, concepts of conscious and unconscious processes are now established in science, drawing from a wealth of empirical research on how people perceive, remember, feel, and process information. Of course, as you would expect in science, there is debate and disagreement about this research. But, one idea stands out: The boundaries between our conscious and unconscious states are permeable, dynamic, and interactive, and there is no valid scientific support for a sharp dichotomy.

This research suggests that much of our behavior takes place in a twilight world of not totally conscious impulses, inklings, automatisms, and reflex reactions. The standard example is the process of learning to drive a car. When people first learn to drive, each maneuver requires their full attention. Yet, after several months or years of driving, people – let's say New York City cab drivers – can drive while they are day dreaming or screaming on their cell phones or even calculating their taxes. They are no longer conscious of the details of gear changes and steering and they are barely aware of a complicated shift in lanes much less the terrified pleadings of their passengers. Our brains seem designed to function as much as possible at this unconscious level, allowing our most heightened levels of consciousness to handle tasks that are either particularly difficult or new.

Recent experiments support the premise that another purpose of consciousness is to enforce a veto on our developing behavior and the competing thoughts that could influence it. This effect is important for the criminal law because offenders may have difficulty vetoing the thoughts that could contribute to criminal behavior and selecting the thoughts that could contribute to law abiding behavior. Let me offer a simple example. Let's say that I am questioning a student in class who seems unprepared and unable to answer questions – not that it would ever happen! But if it did, I may experience several competing thoughts and urges. For the purposes of this illustration, let's assume that these urges are all unconscious. These urges may be (1) I would like to beat up that student; (2) I would like to humiliate that student; (3) I would like to leave the class

immediately and go home to watch TV and eat pizza; and (4) I would like to kindly talk to the student and nudge that student toward some intelligible answers. Granted, my initial and unconscious urges may veer toward the first three, less civilized, alternatives. However, it is my strong hope that my conscious will veto them immediately and select number four as the way to go.

These issues are crucial for the criminal law because the Model Penal Code's voluntary act requirement is based on a distinction between conscious and unconscious processes. The fact that these processes reflect an older science suggests that we are now faced with the challenging task of redefining these mental states for the criminal law. The new scientific work on consciousness can help with this task.

Before I go on to describe some of this research, let me first emphasize that the science of consciousness is about everyone. Of course, conscious and unconscious processes are something that we all possess, no matter who we are or how law abiding we are. I stress the universality of these processes because one way that neuroscience investigates how the brain works is to study people who have an injury or disease that has damaged a specific part of the brain. Such damage can reveal otherwise hidden mechanisms that our brains use to register information unconsciously. These mechanisms are far more difficult to detect in an undamaged brain, devoid of such gateways to the unconscious, although clever scientists also have done much to find these gateways in individuals who do not have brain damage.

EXAMPLES OF MODERN RESEARCH ON CONSCIOUSNESS

Let me give you a few examples of what these studies have revealed in both damaged and undamaged people:

X A woman has brain damage from carbon monoxide poisoning and is unable to recognize objects, such as a pen or a spoon. Yet, she can grasp and use these objects without difficulty, although she has no idea how she does it.

X A stroke patient who is unquestionably blind can, nonetheless, sense items subconsciously such as a bar of light when it is flashed near his blind eye. He can even say whether the bar is horizontal or vertical even though he has no idea how he knows this. He demonstrates a phenomenon called blindsight, a rare form of brain damage in which blinded stroke patients can still perceive items at an unconscious level that they are not able to "see" consciously.

X Patients with certain types of brain damage cannot consciously recognize faces of people they know and love, such as their spouses and children. Yet, when they are shown pictures of these people, their heart rate increases and they show other physiological signs suggesting that recognition is taking place on the unconscious level.

X Non-brain damaged research subjects substantially overestimate the steepness of a hill while standing at the bottom of it. What's more, they judge hills to be even steeper if they

are wearing a backpack or they are unfit. For those of us who haven't been to the gym much lately, these hills would look extremely steep. However, when asked to indicate with their hands how steep the hill is, all these people, no matter what their physical condition, accurately tilt their hands to match the steepness of the hill, even without looking at their hands. Therefore even the less fit among us would tilt our hands as accurately as any Olympic athlete.

Some of the most powerful research in this area suggests that the unconscious also may be in charge of how human beings make decisions about willed movements, such as choosing when to flex a wrist or bend a finger or even to fire a gun. Of course, willed movements lie at the heart of the criminal law's voluntary act requirement.

When do people consciously feel they have engaged in a voluntary act? This question was tested in a long series of experiments conducted by Benjamin Libet, a physiologist at the University of California in San Francisco. A typical Libet experiment, very much simplified for this talk, goes as follows: Libet would ask human subjects to make hand movements whenever they felt like it while he measured the electrical activity in their brains. With EEG recordings, such measurements could be conducted with almost millisecond precision. Libet found that the subjects' brain impulses associated with their movements began about 300 milliseconds, or about a third of a second, before the subjects reported any conscious awareness of their intention to make the movements. In other words, the motor-planning areas in their brains began to stir a third of a second prior to when the subjects became aware of the desire to act. According to Libet and others, a subject's decision to move a finger or a wrist must have originated unconsciously and only appeared to that person as a conscious wish about a third of a second later.

Libet's results spurred an enormous reaction when they were published in the 1980s. They seemed to suggest that we don't control our own minds. By the time we are aware that we want to do something as minor as flexing a finger, that decision has already been made by lower-level brain mechanisms that we can't control. But, Libet's results also showed that the conscious mind is not totally powerless. It could still veto the unconscious mind's proposed movement during a window of about 200 milliseconds between the time the individual became consciously aware of the intention to act and the actual act. In other words, the conscious mind still had time to block the actual movement before it occurred. According to one neurologist, this result suggests that our conscious minds may not have free will but rather "free won't."

Libet's results have been replicated many times over the past two decades in a variety of experiments. They also have been tested with an array of more complicated behaviors. These behaviors range from all types of sports activities, where a person's reaction time is important, to the treatment of obsessive compulsive disorders, where individuals are taught to veto their intrusive thoughts and urges before they engage in unwanted involuntary acts such as repetitive handwashing.

That's not to say that everyone agrees with how Libet's results should be interpreted or what they mean in the philosophical sense. For example, one of the strongest initial criticisms of Libet's results was that they suggested some "binary" state where conscious awareness was

suddenly "clicked on" after, say, a third of a second. The stronger and now accepted argument is that consciousness evolves gradually, starting from the unconscious and moving to pre-conscious states on the way to becoming a settled state of consciousness. What seems like two modes of processing in Libet's experiments – conscious and unconscious – is really a whole brain reaction.

So, let me summarize what I've said up to this point before I move on with my suggestions for how this dilemma might be resolved in the criminal law. Modern scientific research on consciousness confirms that there appears to be no valid scientific basis for the Model Penal Code's dichotomy between voluntary and involuntary behavior. The issue of consciousness is far more complex and subjective than the manner in which the criminal law treats it.

HOW THE LAW CAN CHANGE

Awareness of such complexity doesn't require that each defendant be examined using a standardless case-by-case procedure based on a continuous flux of mental states. I am certainly not suggesting that. The law needs to draw lines somewhere. The question is where to draw them.

I think that there is a way forward if we make several basic changes. The first change is to adopt a simple limiting definition of "voluntary conduct" that fits in well with the criminal law's traditional depiction of "voluntariness" in the Model Penal Code Commentaries without all the complicated and dated baggage. I like what Professor Lloyd Weinreb at Harvard suggested. "*A person does not engage in conduct voluntarily if the conduct is not subject to [that person's] control.*" I leave this definition open to allow in new research on voluntariness, as well as to keep the main statement of criminal liability accurate, even if it is incomplete. This definition also avoids the Model Penal Code's confusing and needless distinction between the *mens rea* of unconsciousness and the *actus reus* of automatism.

This single sentence is not enough by itself, however. So, what I recommend is that the voluntary act requirement constitute three parts: (1) *voluntary acts*, (2) *involuntary acts*, and (3) *semi-voluntary acts*. This third category of semi-voluntary acts, which is new, would include individuals who were either previously shoehorned into the first two categories or wrongly given the insanity defense. For the most part, this new category would include individuals who may be dangerous again and those who have relatively greater control over their actions.

How would this proposal work with some real cases? I have selected two cases with distinct facts to serve as examples.

Regina v. Parks

Regina v. Parks, [1992] 95 D.L.R.4th 27, is an intriguing Canadian sleepwalking case that commentators have discussed rather widely. In *Parks*, the twenty-three-year-old defendant fell asleep one evening on his couch watching a television show that contained some rather violent humor. Later – we don't know exactly when – Parks arose, got into his car, and drove fourteen miles across town and through three traffic lights to reach his in-laws' house. There, he proceeded

to stab and beat his mother in-law to death and attack his father-in-law, nearly killing him.

Parks immediately went to the police and gave himself up. He didn't deny what he had done. But his lawyers, marshaling a team of experts, claimed that the events that took place that evening occurred during an episode of sleepwalking and were therefore involuntary. Parks's attorneys contended that Parks was truly unconscious when he acted and was highly unlikely to be dangerous again because (1) both of Parks's crimes seemed entirely motiveless and Parks turned himself in to the police; (2) over one-third of Parks's extended family had a marked history of sleepwalking and Parks himself suffered various sleep disturbances when he was observed in a sleep lab; (3) two of Parks's prison cell mates described incidents where Parks sat up in bed and talked in his sleep; (4) experts testified that Parks's sleepwalking was a rare occurrence triggered by a combination of precipitating factors (sleep deprivation and high stress) that were unlikely to recur together; and (5) avoidance of this stress combination in addition to treatment would likely prevent further violence. Indeed, Parks was eventually put on medication and his sleepwalking episodes ceased.

Parks was totally acquitted of all charges, including unpremeditated homicide and attempted homicide. His problems with sleepwalking and his family history of sleepwalking were accepted as "real." Even the prosecution never challenged the conclusion that Parks was sleepwalking when he killed and assaulted.

Parks's acquittal is consistent with current American law, accepting the court's presumption that Parks was actually sleepwalking and therefore unconscious. But, we can also look at the *Parks* case another way if we go back over it. Parks's crimes were, of course, extremely serious (murder and attempted murder) as were the circumstances surrounding them (the brutality of the stabbing and beating). Clearly, the extent of the harm caused was nearly as grave as could be. On the other hand, Parks's character seemed strongly in his favor as was the evidence of lack of motive that supported the claim of unconsciousness. From all accounts, Parks got along very well with his in-laws – for example, his mother-in-law called him her "gentle giant" (that's an understatement!) – and he had no financial incentive to kill them.

At the time there was a great deal of stress in Parks's life, and this had caused him a number of sleep disturbances and created tensions within his family. A year before the crimes, Parks began to acquire a mass of gambling debts. To hide the heavy losses, he took funds from his family savings and began to embezzle at work. These actions cost him his job and he was charged with theft. Parks was forced to put his house up for sale to cover his debts, but his gambling continued. A week before his violent deeds, Parks was also repeatedly confronted by his wife about his gambling. He and his wife then made plans to discuss Parks's gambling problems and financial difficulties with both their families over the weekend. It was the evening before these expected visits to their families that Parks committed his violence.

Now, expert testimony and statistics on sleepwalkers suggest that Parks's acquittal did not create a threat to the safety or welfare of the community because repeated violent sleepwalking is very rare. However, apparently the expert testimony presumed that Parks would be taking

medication and following a more stress-free life. The public may not have confidence in the criminal justice system knowing that it set Parks free without supervision. Despite experts' predictions, individuals may fear that Parks would be violent again.

It's this concern with Parks's potential for recurring violence and with his medical history that makes the Parks case fall into an ambiguous gray area. A balancing test of all the factors involved in the case suggests that other courts would not acquit someone like Parks. Parks's history of sleep and financial disorders is a double-edged sword; the evidence appears mitigating for this particular offense but aggravating considering his proclivity for future dangerousness. Indeed, the prosecution in the Parks case argued on appeal that Parks's sleepwalking should be classified as insane automatism because Parks could be violent again and because sleepwalking was a "disease of the mind" that warranted institutionalization.

My recommendation of the three-part requirement can prevent such gray-area behaviors from being classified as insane or voluntary because of a court's concern that they may recur, particularly because the odds are so much against it. Classifying Parks's behavior as semi-voluntary would preclude an unqualified acquittal for him, but, at the same time, avoid the injustice of putting someone like Parks in an institution for the criminally insane. It also would discourage the temptation to classify his behavior as voluntary.

Sleepwalking cases like *Parks* evoke the classic involuntary act defense. However, there are many other kinds of conditions linked to involuntariness that illustrate the complexity of these determinations – ranging from concussion to hypoglycemia to blackouts.

Grundberg v. Upjohn Company

The voluntary ingestion of legal, therapeutic drugs (apart from alcohol) can constitute a particularly complicated causal sequence because the condition is at least in part externally induced (although the defendant chooses to consume the drug). However, some cases, like *Grundberg v. Upjohn Company*, 813 P.2d 89 (Utah 1991), seem more straightforward. In 1988, Ilo Grundberg, age 57, shot her 83-year-old mother eight times in the head, although she could not explain why. Grundberg testified that she had no memory of the shooting. The act seemed to be totally unmotivated. The State dismissed murder charges after a court-appointed psychiatrist testified that Grundberg acted involuntarily because of her adverse reaction to Halcion, a sleeping pill, that Grundberg took for insomnia. Grundberg then sued Upjohn Company, the manufacturer of Halcion, for $21 million in a product liability action that settled prior to trial.

Grundberg's settlement included a confidentiality agreement with Upjohn Company, so we don't know all the details about the case. But we do know that Grundberg had been taking Halcion for thirteen months before she shot and killed her mother. Extreme adverse side effects to Halcion increase with length of usage and, by 1987, Upjohn Company was aware of twenty-four reports of murders, attempted murders, and physical threats linked to Halcion. At the same time, the circumstances in Grundberg's life were not going well. Along with Halcion she was taking various medications for chronic depression and anxiety. Her job loss six months before the murder

prompted Grundberg to move with her mother to Hurricane, Utah, where they lived together in a mobile home. On the day of the murder, Grundberg consumed Valium and codeine as well as Halcion, and shot her mother that evening. On the basis of facts like these, her lawyers were able to successfully establish causal connections between Grundberg's ingestion of Halcion and her violence.

As in the *Parks* case, however, we can look at the *Grundberg* case another way. The facts in *Grundberg* also are a double-edged sword. If Grundberg had appeared before another court, her case could have come out differently. For example, it would not be out of the question for a court to decide that Grundberg could be eligible for the insanity defense or that she had acted voluntarily – in other words, that she was a murderer.

The main purpose of my semi-voluntary act category is to prevent courts from labeling as insane individuals who do not show the kind of mental disease or defect that would make them suitable for commitment under the insanity provision, and who seem unlikely to engage in recurrent acts, assuming such acts are even remotely predictable. The category also prevents people from getting a harsher sentence than they deserve if a court should determine that they acted voluntarily.

Unlike alcohol, taking therapeutic psychotropic drugs can often have unforeseeable effects that involve changes in a person's conscious levels of awareness as well as their circumstances. My proposed three-part requirement is forward looking in terms of the kinds of cases and conditions that we can expect to see more of in the future. For example, society's growing use of psychotropic drugs to remedy all sorts of ills, including stress, seems likely to result in an increase in claims of unconsciousness or automatism when the effects of these drugs are unpredictable or they mix badly with an individual's use of other drugs.

The contributions of consciousness research can also enlighten many other aspects of the criminal law and most particularly, our interpretation of *mens rea* standards. Such areas of inquiry include the following: what do the terms "intentional," "knowing," "reckless," "negligent," "awareness," and "conscious object" all really mean when they appear in criminal codes and the legislature tries to define them? These questions show that *mens rea* is a critical feature of the law's attempt to classify the workings of the human mind. Therefore *mens rea* standards, along with the voluntary act requirement, can be reformulated to harmonize with the new discoveries that science brings.

CONCLUSION

I think the recommendations I've made tonight present a workable solution to the problems created by the current legal principles governing the voluntary act requirement. I haven't made recommendations concerning how these three-part categories should be handled procedurally because even though that topic is very important, it's more than enough for yet another talk.

However, I do think that the criminal law is sufficiently robust to incorporate new research

on consciousness without being dismantled philosophically. At the same time, the criminal law can't remain static. My proposal of a new category of semi-voluntary acts requires significant rethinking of the voluntary act requirement which, because of its bedrock status, should have a domino-effect on the way that we view other key criminal law doctrines, such as *mens rea*. If the criminal law can confront and modify the problem of "either/ or" embedded in the voluntary act requirement, it can join science with a more nuanced, and more just, view of the human mind.

To sum up, consciousness research can be consciousness raising. It can make us aware of the inadequacies in our legal paradigms and some of the ways they can be rectified. Perhaps, with time, it will make us more fully aware of the individuals who suffer because of them.