CHAPTER 19

Lessons from Libet

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Libet's followers sometimes claim that his famous experiments undermine all freedom and responsibility. Libet's critics often respond that his experiments are completely irrelevant to freedom and responsibility. When intelligent people disagree so starkly and accuse their opponents of simple mistakes, I suspect that each side misunderstands their apparent opponents.

One common mistake is to think that Libet's experiments are about determinism and free will. They are not. Libet's experiments do not even pretend to show that our wills are or are not determined by prior causes or that we can or cannot control our wills. Libet himself often talks as if his experiments address the traditional issue of free will and determinism, but that only shows how badly people can misinterpret their own work.

The real question that Libet's experiments raise is whether our conscious wills cause the willed actions. What is at issue is the effects rather than the causes of conscious will. The question is whether conscious will is impotent, not whether it is free. If conscious will is impotent, then we cannot control our actions by means of conscious will, and this disability might reduce our freedom of action. Nonetheless, this challenge to freedom of action is separate from the traditional challenge to freedom of will that comes from determinism, since our wills might be impotent even if they are not determined, and even if determinism is compatible with free will.

A major contribution of Libet's experiments is to raise or sharpen this new question. Of course, many predecessors denied that conscious will causes action,[1] but they rarely, if ever, gave enough reason to make people take that apparently outrageous denial seriously. And none of these predecessors focused on the issue of timing that was central to Libet's research. By raising a new issue in a new way, Libet's work made (and continues to make) many people rethink their assumptions. That accomplishment is a mark of good philosophy as well as good science.

The assumptions at stake are both normative and descriptive. The relevant normative assumption is, roughly, that causation by conscious will is necessary for responsibility. The descriptive assumption that Libet questions is, again roughly, that conscious will causes the willed action. This chapter will address these assumptions in turn. My conclusion will be that Libet's experiments do not undermine responsibility in general, but they do illuminate some particular cases as well as common standards of responsibility.

1. IS CAUSATION BY CONSCIOUS WILL NECESSARY FOR LEGAL RESPONSIBILITY?

Let's begin with legal responsibility, because the standards of responsibility in law are stated explicitly in legal statutes and decisions. Although consciousness and will are crucial to law at several points,[2] the most direct connection between conscious will and legal responsibility is in the voluntary act requirement. The dominant

formulation of this requirement is in the Model Penal Code (MPC) Section 2.01:

> (1) A person is not guilty of an offense unless his liability is based on conduct that includes a voluntary act or the omission to perform an act of which he is physically capable. (2) The following are not voluntary acts within the meaning of this Section: (a) a reflex or convulsion; (b) a bodily movement during unconsciousness or sleep; (c) conduct during hypnosis or resulting from hypnotic suggestion; (d) a bodily movement that otherwise is not a product of the effort or determination of the actor, either conscious or habitual.

This formulation does not require that the offense itself is a voluntary act. All it requires is that the conduct "includes" a voluntary act. In one case, a driver had an epileptic seizure while driving, and the resulting accident killed four people.[3] The epileptic seizure was not a voluntary act, but the driver was held liable on the grounds that a larger slice of his conduct included starting to drive while knowing that he was susceptible to epileptic seizures. Profound time-framing problems arise regarding how far back the law reaches in order to find a voluntary act.[4] Still, if no act within an appropriate scope counts as a voluntary act, then the defendant is not liable at all, according to MPC 2.01.

The Model Penal Code does not define what voluntary acts are, but it does give examples of what voluntary acts are not. The crucial example here is "a bodily movement that otherwise is not a product of the effort or determination of the actor, either conscious or habitual." An act is not habitual unless it has been repeated on several occasions in the past. Thus, when an act has not been done repeatedly, clause (2)(d) in MPC 2.01 implies that a voluntary act must be "a product of effort or determination" that is "conscious." The word "product" requires a causal relation. The phrase "effort or determination" suggests will. Hence, this clause directly implies that a nonhabitual act is not voluntary unless it is caused by conscious will.

The same requirement is also suggested less directly by other parts of MPC 2.01. Clause (2)(a) says that a reflex or convulsion is not a voluntary act. When doctors probe for reflexes, their patients are usually conscious of the resulting reflex movements, and they also usually desire that those movements occur, since something is wrong with them if no reflex movements occur. Nonetheless, the patients are not held responsible for those reflex movements or for their effects (such as kicking the doctor). Thus, consciousness of movement and desire to move are not enough for responsibility. Why not? Because conscious will does not cause the willed action in reflexes and convulsions. Thus, the rationale for clause (2)(a) seems to be that causation by conscious will is required for responsibility.

These requirements are not idiosyncratic. As of 2002, twenty states in the United States adopted an explicit voluntary act requirement. Most of these states explicitly based their requirement on the Model Penal Code. Most of the other states followed the Model Penal Code requirement implicitly. In one way or another, almost all jurisdictions in the United States require causation by conscious will for responsibility.[5]

Critics might deny that the voluntary act requirement really requires causation by conscious will for responsibility. After all, if scientists showed that conscious will does not cause the willed action, judges would still never interpret the voluntary act requirement (or any other clause) so as to imply that nobody is ever responsible for any act. That is correct. No matter what scientists find, judges are likely to stretch the law so that normal acts count as voluntary acts. Otherwise, all criminals would be released, and mayhem would result. However, except in the minds of legal realists, judges do not make the law and do not alone determine what the law is. Insofar as law is at least partly determined by the plain meaning of what is written in black and white on the pages of statutes,[6] the law (or, at least, Model Penal Code section 2.01) seems to hold on its face that legal responsibility requires causation by conscious will.

2. IS CAUSATION BY CONSCIOUS WILL NECESSARY FOR MORAL RESPONSIBILITY?

What about morality? Standards for legal responsibility need not always reflect standards for

moral responsibility. However, when the law deviates from common morality, it is most often for practical reasons. It is hard to imagine any practical reason for the law to add a requirement of causation by conscious will. To the contrary, there seem to be practical reasons *against* requiring prosecutors to prove causation by conscious will within the evidential and temporal limits of actual legal trials. Hence, when the law does require causation by conscious will for legal responsibility, this legal requirement seems to be based on moral assumptions.

The fact that this legal standard is so widespread provides additional evidence that common morality includes this requirement. It is also relevant that this standard is a central part of criminal law. Criminal laws—or at least those involving *mala in se* crimes—usually reflect common moral judgments. Thus, the fact that causation by conscious will is so widely seen as necessary for legal responsibility in cases of (*mala in se*) crimes suggests that this requirement for responsibility is part of not just law but also common morality.

This moral claim receives further support by comparing cases. Consider someone who is asleep but grabs a knife, walks into an adjoining bedroom, stabs her daughter, walks back to her own bedroom, and is completely surprised in the morning to find her daughter dead.[7] Of course, it is often hard to know what is happening in real cases like this. Perhaps some are faking. But suppose the facts are just as claimed. Since this person grabs a knife rather than a pencil and stabs into a body rather than randomly, she might seem partially conscious, and her action looks intentional at some level. Still, most people would say that the agent is not responsible or, at least, not fully responsible.[8] This intuition is confirmed when the MPC section 2.01 (2)(b) as well as various courts[9] excuse acts during sleep, presumably because many people would view it as morally unfair to hold real sleepwalkers responsible. Why? The answer seems to be that they are seen as lacking consciousness and, hence, control.

Now modify just one fact: A different sleepwalker is conscious of what he is doing, but his conscious will does not initiate his bodily movements and cannot control them. He simply observes what is happening. Despite being conscious of his act, he does not seem any more responsible than in the previous case when the sleepwalker was not conscious. Why not? Because this new sleepwalker's consciousness does not play any causal role in his act. Impotent consciousness does not increase his control over what he does, so adding impotent consciousness cannot make him responsible for his action. This comparison thus suggests that and why conscious will without causation is not enough for full moral responsibility.

Contrasts like these suggest to many people that a person is fully responsible for an act only when the act results from the agent's conscious thought or choice in some way. Of course, many details need to be spelled out, and qualifications need to be added. Still, the point for now is simply that causation by conscious will seems necessary for complete moral responsibility, at least in many circumstances.

We still need to narrow the issue. Sleepwalkers are abnormal and unconscious of most features of their surroundings and movements. In contrast, other abnormal agents are conscious of almost all aspects of their surroundings and movements, but they are not conscious of any intention to make their movements. Examples include Tourette's syndrome and alien hand syndrome.[10] Such cases suggest that general consciousness is not enough for responsibility if the agent lacks consciousness of any intention related to that bodily movement. But what about cases where an agent is both normal and conscious of a specific intent to do the act? Full responsibility still seems to be lacking if that conscious intention does not cause the action.

To see why, imagine that someone plans to kill a rival by running him over at 9:00 as the rival jogs by his house. It is 9:00 now, but the driver thinks it is 8:00, since he forgot daylight saving time, so the driver decides to go buy breakfast. As he drives carefully out of his driveway, the jogger appears unexpectedly and is run over and killed by accident. The driver did will to kill the jogger, had that will at the time when he killed the jogger, and killed him in the intended way at the intended place and time. The driver's

will was presumably free in any way that any will is ever free. Nonetheless, the driver's will did not cause the accident or the death, because only his intention to buy breakfast caused him to leave then. Hence, this particular act of killing was not done *from* free will, and the driver is neither morally nor legally responsible for first-degree murder. He might not even be guilty of reckless driving or attempted murder. Thus, full responsibility for an act requires more than a free will to do the act. It also requires that the will causes the act.

Fine, critics say, but what if the will is unconscious? Imagine that a cook makes soup for a friend. The cook's only conscious goal is to please the friend. Unfortunately, the soup contains nuts to which the friend is allergic. The allergy is unforeseeable, so the cook is neither negligent nor morally or legally responsible for harming the friend. Now suppose the cook has a totally unconscious desire to hurt his friend. The cook envies his friend's success and wants to punish his friend for succeeding, but the cook is totally unaware of any envy or any plan to punish. Even if such an unconscious intention could be established, it would not be enough to make the cook responsible.[11] After all, if the cook is totally unconscious of any plan to hurt his friend, how can he control whether or not he hurts his friend? Without this kind of conscious control, how can the cook be responsible?

The jogger example suggests that *causation* by will is required. The cook case suggests that *consciousness* of will is required. Nonetheless, it is still possible that consciousness need not play any role in the causation. However, it would be hard to understand why both elements—causation by will and consciousness of will—are necessary if they need not work together so that consciousness plays a role in the causation. Hence, despite possible responses, I conclude that causation by consciousness or by conscious will is necessary for full moral responsibility.

3. DO CONSCIOUS WILLS CAUSE ACTS?

The reason why law and common sense can feel free to impose the above requirement on moral responsibility is that conscious will normally seems to cause the acts for which people are responsible. A challenge arises only if there is some reason to believe that conscious will does not really cause the willed act.

Such a reason might come from the dualistic view that mind and body are separate substances plus an account of causation that rules out causal relations between such separate substances.[12] Another reason could come from the claim that all of our actions have mechanistic causes (that is, causes that do not depend on any mental property) plus the claim that mechanistic causes exclude causation by conscious will (possibly along with other kinds of mental causation).[13] Although these other challenges are interesting as well, I will focus here on separate challenges raised by Benjamin Libet.

Libet's experiments are discussed in several places in this volume, but it is worthwhile to describe them briefly in my own terms. Libet asked his subjects to flex their wrists at any time they wanted and then report the location of a dot moving quickly around a clock face when they first felt the urge or intention to flex their wrists. Throughout this process, he recorded their neural activity (with EEG) as well as their wrist movements (with EMG). By averaging forty trials, Libet found a pattern in the brain electrical activity recorded by the vertex electrode. That activity ramped up slowly, reaching its pinnacle at the time when bodily movement began, and then fell quickly after movement. This ramp-shaped activity—called a readiness potential or RP—was not found in trials where subjects were asked to time stimuli but not to move, so this pattern seemed to be connected either to will or to movement. It cannot be due simply to watching the clock or trying to time a mental event.

What was surprising was the order: The readiness potential with unplanned actions (type II RP) began around 550 ms before the hand movement (M) began, and the reported time of conscious will (W) was around 150–200 ms before the hand movement (M) began, so the readiness potential (type II RP) began around 350–400 ms before the reported time of conscious will (W). This order suggests that conscious will does not initiate the readiness potential, assuming that

causation cannot run backward in time.[14] This implication is surprising, because most people think that their conscious choice is what begins the process that makes their body move in such cases.

These results have engendered an avalanche of scientific and philosophical commentary, including the essays in this volume, but there remains tremendous confusion about what exactly Libet's findings show and what they are supposed to show. To cut through this fog, we first need to specify what Libet does *not* show or try to show.

First, Libet's experiments do not show or pretend to show that our actions or wills are not determined. His results have nothing to do with determinism. Hence, they also do not have anything to do with any kind of free will that is equivalent to a denial of determinism. As I said before, the old issue of free will versus determinism is quite distinct from the new challenge to responsibility that Libet raises.

Second, Libet's experiments do not show or try to show that agents do not have intentions or wills or that their intentions or wills do not cause their actions (despite what he sometimes seems to say). Physicalists claim that intentions and wills (or choices) are constituted by, realized in, or identical with certain brain states or events. That brain activity might just be the readiness potential or RP that Libet measured. The readiness potential started before any consciousness of an intention or will, but it still might be an intention or will as long as wills or intentions can be unconscious. Moreover, if that readiness potential is or constitutes an intention or will, and if the readiness potential causes the bodily movement, then the intention or will causes the bodily movement, just as it seems. The issues that Libet's results raise are not about will in general but only about conscious will and consciousness of will.

Third, Libet's experiments do not support epiphenomenalism about all conscious mental states or even all conscious intentions or willings. Libet's subjects were conscious of general distal intentions to follow the instructions. Libet's results do not pretend to show that those general distal intentions did not affect what his subjects did. They would not have sat still and flexed their wrists if they had not intended to comply with his instructions. Hence, Libet's results do not support epiphenomenalism in general about all consciousness or even about all conscious intentions.

Fourth, even if we focus on proximal (not distal) conscious (not unconscious) intentions or wills, Libet does not show that this specific kind of intention has no effects at all. After all, we might feel more guilt at a later time if we had a proximal conscious intention to do the action than if we lacked such an intention.[15] What matters to Libet is not such later side-effects. His concern is whether our wills cause the willed acts in particular.

Fifth, Libet does not claim to show that conscious proximal wills do not play any role at all in action. He seems to hypothesize that consciousness of our will (at about 150–200 ms before movement) makes us aware of what we are about to do, and this enables us to veto the movement if we decide to veto it.[16] This is how he reinstates free will (or free won't—as Ramachandran dubbed it), despite his findings. Thus, Libet grants that consciousness of intention can affect what we do, at least in those cases where we veto an action (and maybe also when we could but do not veto our actions). His results are not about whether conscious proximal will plays any role at all in action. They are, instead, about which role conscious proximal will does play in action and, in particular, whether conscious proximal will initiates bodily movement.

Sixth, Libet's results do not show that conscious proximal will never initiates any action process (including the bodily movement and the brain activity that causes it). After all, his experiments tested only one kind of action, and it was a strange kind. We do not normally consciously intend to move a body part for no reason. Hence, it would be way too hasty to generalize from the few actions that he tested to all actions in general.

So, what do Libet's results show? He showed that, in *some* cases, a *conscious proximal* will to move now does *not initiate* the brain activity (or RP) that begins the process that produces the bodily movement or action. This modest conclusion might seem disappointing, but it still

might have important implications for responsibility.

Whether it does have important implications depends on which interpretation is correct. Like all experiments, Libet's results rule out some possibilities but leave others open.

On one interpretation, the brain activity (or RP) causes the conscious will or consciousness of will, which then in turn causes the bodily movement.

Figure 19.1

I will call this the *commonsense interpretation*, because it does not challenge common views about action and responsibility. It fits right into what most people think about themselves and others.

On other interpretations, the brain activity (readiness potential, or RP) causes the bodily movement directly without involving consciousness or conscious will as an intermediate step in the causal chain. I will call these interpretations revolutionary because they do undermine what most people think about their actions. Revolutionary interpretations come in three versions, depending on what is supposed to cause conscious will.

On one version, the brain activity (RP) is a common cause of both the conscious will (W) and also the bodily movement (M):

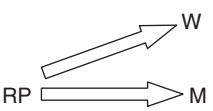

Figure 19.2

I will call this the *common cause interpretation.*

On another version, the brain activity (RP) causes the bodily movement (M), but some other brain activity (B2—not detected by Libet and not caused by RP) causes the conscious will (W).

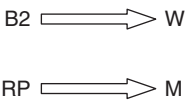

Figure 19.3

I will call this the *distinct process interpretation.*

On a third version, the brain activity (RP) causes the bodily movement (M), and, when we notice our body moving, then later we ascribe a conscious will (W) to ourselves in certain circumstances.

Figure 19.4

I will call this the *reconstruction interpretation.*[17]

These last three interpretations are revolutionary, because they all imply that conscious will does not initiate action in the way that it seems to. Even on these revolutionary interpretations, agents might have conscious access to the initiating causes of their acts, but this conscious access occurs later, not at the time of initiation. Consciousness also still might affect prior planning, sustaining of effort, and even guiding the act after it starts. All that consciousness does not do is initiate the action, on these views. Hence, agents still might have some conscious control, such as by vetoing acts or stopping an action after it has started, but they cannot control their acts by means of refusing to initiate the acts.

What's so revolutionary about that? To many people, their actions seem to be initiated and caused by a conscious proximal will to act. When I decide not to raise my hand to ask a question after a lecture, sometimes I feel the urge and have to stop myself, but often I just decide not to ask my question, and I feel no urge that I need to resist. And when I do raise my hand, it feels as if my conscious proximal will to raise my hand now to attract attention so that I can ask a question is what causes the physical process that

includes my hand going up. Thus, the revolutionary interpretations suggest that the phenomenology of action is illusory in this respect.[18]

Most importantly, if responsibility requires causation by conscious will (as I argued in sections 1–2), and if Libet's results show that conscious intention does not cause action (as the revolutionary interpretations suggest), then the revolutionary interpretations of Libet's results seem to undermine some common views of responsibility.

These unnerving implications of the revolutionary interpretation make it crucial to determine which interpretation of Libet's results is correct. Does RP cause W, which causes M? Or is RP a common cause of W and M? Or does RP cause M and something else causes W? Or does RP cause M, which causes W?

Several recent experiments have tried to shed light on this issue. Haggard and Eimer[19] used the fact that Libet needed to average 40 trials in each run for each subject. Within the averaged set, there was a great deal of variation in timing. Haggard and Eimer replicated Libet's method, but then split the cases where the RP began early from the cases where the RP began late. They also split the cases where W was reported early from the cases where W was reported late. They found no correlation between early RPs and early Ws or between late RPs and late Ws. They did, however, find a correlation between early versus late Ws and early versus late LRPs (lateralized readiness potentials).

Correlation does not prove causation, of course, but lack of correlation is still evidence against causation. When one event causes another, the timing of the effect should vary with the timing of the cause. This point is an instance of John Stuart Mill's method of concomitant variation.[20] Applying that method to our case, if RP did cause W, then there should be a correlation between early RPs and early Ws as well as between late RPs and late Ws. Haggard and Eimer's failure to find any such correlation between RP and W thus suggests that RP does not cause W. Their finding then provides some evidence against the commonsense interpretation as well as the common cause interpretation of Libet's results. In contrast, Haggard and Eimer's findings are consistent with both the distinct process interpretation (where LRP might be that distinct process that causes W) and possibly the reconstruction interpretation (if the time between M and W can vary independently of RP).

Another way to test these causal models is to manipulate various events. Lau and colleagues[21] replicated the crucial parts of Libet's set-up but applied TMS (transcranial magnetic stimulation) to preSMA (presupplemenatary motor area) shortly *after* the bodily movement began. They found that TMS at this later time affected the reported time of W, even though consciousness of will (W) seems to occur before movement (M). Banks and Isham[22] similarly found that an auditory beep 5–60 ms *after* movement (M) affected reported time of conscious will (W). With later TMS and beeps, some subjects reported a time of conscious will even *after* the movement began. The point is that, if conscious will (W) causes movement (M), then W must occur before M, but then it is hard to see how TMS or a beep after M could affect the time at which subjects report first feeling or detecting W. These manipulation findings thus create trouble for the claim that W causes M and, thereby, for the commonsense interpretation. In contrast, these manipulation results are perfectly consistent with the other three interpretations (common cause, separate process, and reconstruction).

A group at Dartmouth College is planning to use a different method of manipulation: hypnosis. Subjects will be hypnotized so that their hands will move without them being conscious of willing to move (M without W) and also so that, when they consciously will to move, their hands will not move (W without M). If we find the distinctive RP shape (ramp up then fall quickly) in cases of M without W but not in cases of W without M, then that result will suggest that RP causes M but does not cause W. This finding would be contrary to the commonsense and common cause interpretations but consistent with the distinct process interpretation and possibly the reconstruction interpretation (though the latter would need to explain how we can have W without M). And if we find the distinctive RP shape in cases of W without M but

not in cases of M without W, that finding will suggest that RP causes W but does not directly cause M. That finding would be contrary to the common cause interpretation and the reconstruction interpretation but consistent with the commonsense interpretation and the distinct process interpretation. Unfortunately, this experiment is still being planned, so no results are available yet.

Of course, none of these experiments is (or will be) conclusive. Each needs to be replicated (or finished!), and other techniques need to be tried. It is not yet clear which interpretation is best. The commonsense interpretation is under some pressure from the results so far, but we do not yet know whether the revolution will succeed in the end.

4. IMPLICATIONS?

Nonetheless, it is not too early to ask what would follow *if* the commonsense view were refuted. In particular, would all responsibility be undermined if scientists found that conscious will did not cause bodily movements? No.

One reason is that conscious will and intention *does* cause action in Libet's experiments. As mentioned before, Libet's subjects chose to participate and intended to follow his instructions. These distal wills and intentions occurred minutes before they flexed their wrists. Nothing in Libet's findings throws any doubt on the natural assumption that his subjects would not have sat there and moved their hands as they did if they had not had those distal wills and intentions.[23] Thus, Libet did not show or try to show that no kind of conscious will ever causes actions (or at least it would be uncharitable to interpret him as trying to show that).

Nonetheless, although subjects decided in advance *what* to do, they did not decide in advance *when* to do it. Their distal wills did not cause the subjects to move their hands at the precise time when they did move. They could follow the instructions as they intended whether they moved their hands at time t or at time t plus one second or at time t minus one second or at many other times.[24] Thus, even if their distal intentions caused them to move at one time or another within a certain time period, that distal intention did not cause them to move at the particular time when they did move rather than at some other time during that period. It caused them to make some movement of a general kind, but it did not cause the particular movement that actually occurred.

Which is necessary for responsibility: the general distal intention or the particular proximal intention or both? Suppose that Bill makes a conscious plan to push Carl in front of a subway car. When the time arrives, somebody else, Andy, pushes Bill into Carl, and the impact makes Carl fall in front of the subway car where he is killed. Bill does not seem guilty of murder, because Bill's general distal plan or intention did not cause his impact with Carl. Cases like this suggest that a general distal intention is not enough for responsibility when an agent's particular proximal intention does not cause the movement or the harm for which the agent might be responsible. Hence, an efficacious proximal intention seems necessary for full responsibility.

The proximal intention still might not have to be conscious. If a conscious distal intention or plan causes an agent to develop a brain state that later causes a proximal intention along with the act, then it is not clear why the proximal intention also needs to be conscious in order for the agent to be responsible for the planned act.

Whether a conscious proximal will is crucial for responsibility might depend on the kind of act in question. In some cases, it does not matter exactly when an action is done. Then responsibility seems to depend only on a distal will to do some act of the general kind and not on a conscious proximal will to do the particular act at the particular time. For example, if I plan to poison someone or rob a bank, it usually does not matter exactly when I do it, so I can be held responsible for doing some act of that general kind (poisoning or bank robbery), even if I was not conscious of choosing the exact time to pour poison in the victim's cup or to enter the bank. In contrast, there are other cases where the precise timing of a bodily movement does makes all the difference to whether the movement causes harm or violates a rule or law. For example, the precise time when a driver swerves a car to avoid

an obstacle can determine whether that driver hits and kills a pedestrian. In that subclass of cases, responsibility seems to depend not only on a general intention to do an act of the kind but also on the proximal intention to act at that particular time.

Even when we focus on proximal will or intention to act right now as opposed to slightly earlier or later, the actions, intentions, and wills in Libet's experiments are too odd in several ways to support any general conclusion about all of human action where proximal will matters. First, Libet's subject had no reason to act at one time instead of somewhat earlier or later. It seems possible that conscious proximal will does *not* cause bodily movement when an agent has no reason to move at a particular time, but conscious proximal will still *does* cause bodily movement when the agent does have a reason to move at a particular time.

Second, the proximal will or intention of Libet's subjects was simply to move a certain body part. They had no goal beyond that movement, other than to comply with the instructions or to finish the experiment quickly. It was not as if their finger was on the trigger of a gun, and they wanted to achieve a goal of harming someone by pulling the trigger. It is rare in everyday life to move a body part with no intention other than to move it (or just in order to fulfill instructions to move it). Again, it seems possible that conscious will does *not* cause bodily movement when an agent has no intention other than to move a certain body part, but conscious will still *does* cause bodily movement when the agent does have a goal or intention beyond mere bodily movement.

Third, Libet asked his subjects to move the same body part many times. He spent a full day training his subjects, and, even after the experiment began, he needed forty trials to average in each run. It seems plausible that Libet's subjects quickly developed a habit, so later trials (perhaps after the first ten or so) were done unthinkingly by habit. It is common sense, supported by psychological experimentation, that habitual actions are done with less consciousness than nonhabitual actions. This is recognized by the reference to habit in MPC 2.10 (2)(d), quoted above. Hence, it seems plausible that conscious will does *not* cause bodily movements that are habitual but still *does* cause bodily movements that are not habitual.

All of these differences dictate against hastily generalizing from Libet's research to human action in general. Still, it is not completely clear which generalizations are too hasty. After all, much science begins with simple cases and then hypothesizes a general rule to be tested in other cases. That is what Libet does. Defenders of Libet's generalizations can respond that we have no compelling evidence that other acts differ in relevant ways. It might seem plausible that conscious will precedes and causes bodily movements in other cases, but those other cases have not been tested in careful experiments.[25] If we have tested only a sample of a larger class, and if all of that sample shows a certain property, and if there is no reason to think that the rest of the class differs from the sample, then that finding is at least some reason to expect that the property generalizes to the whole class or most of that class. Still, the differences listed above do give at least some reason to think that the sample tested by Libet is not representative of the wider class of human actions.

Another response is that complex actions for reasons and goals are made up of little bits of bodily movement like those that Libet studied. It is not clear how the larger actions can be free or controlled if their smaller parts are not. It is also not clear how an agent can be responsible for the larger action when the agent is not responsible for any of its smallest parts. This puzzle is an instance of a more general puzzle of emergent properties of wholes that are not properties of any parts. (Compare: How can water be liquid when none of its molecules is liquid?) If this puzzle cannot be solved, then there might potentially be some route to argue from Libet's results to a general conclusion about all human actions, including the larger actions done for reasons and goals. However, it really should not be surprising that humans can be responsible for larger complex actions without being responsible for the parts of which those larger actions are constituted. A city council with ten members can be responsible for voting a tax increase, even if that vote is

constituted by ten individual votes, and the council is not responsible for any of those individual votes. I can be responsible for making noise by drumming my fingers, even if I am not aware of the movement of any particular finger. And so on. Although it is not completely clear how this works, it does seem to work, so we do seem to be able to be responsible for a complex action without being responsible for any of its individual parts.

Does this make Libet's experiments completely irrelevant to responsibility? No. Just as we should not infer from the actions Libet studied to all actions, so we should not infer that, since Libet's experiments do not apply to all actions, they show nothing about any action. Libet's findings are limited in scope, but they can still illuminate action, the role of consciousness, and responsibility in a special set of cases.

In particular, Libet's results still might suggest that specific requirements for responsibility are not met in a subclass of actions. Consider what I will call minimal actions—actions done quickly without awareness of what one is doing until after it is too late to stop. Minimal acts come in many varieties, but examples should clarify the idea.

Imagine that Sally was driving her car carefully under the speed limit down the main street of a town when a cat ran out in front of her car. She automatically swerved to the right in order to miss the cat. Unfortunately, she hit and killed a pedestrian on the sidewalk, whom she had seen only peripherally. It seems to me that Sally was reckless and, hence, responsible for the pedestrian's death if she was conscious of forming a plan to swerve in order to save the cat, and if she was also conscious that swerving to the right would create a risk of serious injury to people on the sidewalk. In contrast, Sally was not responsible if the whole incident happened so quickly that she was never conscious of turning the car, much less of any risk to anyone, before it was too late to avoid the accident. The tricky case is in the middle, where Sally turned the car automatically without becoming conscious of any plan or risk, but she was conscious of turning and yet was not able to stop herself in time to avoid hitting the pedestrian. She essentially looked on as her body reacted. Some people might doubt that cases like this are possible. What Libet contributes is a better understanding of how they can happen. He shows how much can happen in our brains before we become conscious of willing anything. He also shows how short the window is when we are able to veto our automatic actions. Libet's research, thus, might make some people more willing to believe that Sally was not in conscious control, even if she was conscious.

Another case is *State v. Utter* (1971). Sadly, a father stabbed his young son when his son unexpectedly approached him from the rear:

> Defendant testified that as a result of his jungle warfare training and experiences in World War II he had on two occasions reacted violently toward people approaching him unexpectedly from the rear and that his act of stabbing his son was a conditioned response, which was defined by his psychiatrist as an act or pattern of activity occurring so rapidly, so uniformly as to be automatic in response to a certain stimulus.

This defendant was found guilty, largely because he had been drinking (though not heavily) so he was held responsible for slowing his own ability to inhibit or veto his actions. However, the court suggested that the defense might have worked if he had not been drinking, even though the act does look organized and directed in the same way as an intended act. Again, Libet helps us understand how a quick action that was not planned in advance could happen without consciousness, even though it looks fairly complex and intentional.

Agents like these might be responsible if their acts were habitual. Recall that MPC section 2.01(2)(d) denies responsibility for acts that are "not a product of the effort or determination of the actor, either conscious or habitual." This voluntary act requirement suggests that causation by conscious will is not required for responsibility in cases of habit. However, Sally's swerve and Utter's knifing are not habitual in any normal sense. Sally might have swerved before, and Utter did react violently "on two occasions," but neither of them did such acts regularly. Thus, if their acts were not the product of conscious will, they would seem not to be responsible for what they did. At least, Libet can

help us understand how such people could have failed to meet the requirements of responsibility.

Other minimal actions might include a quick reaction to provocation or to being shot,[26] some acts during sleep or immediately upon awaking,[27] and some cases of succumbing to temptation.[28] Libet's research suggests that some cases like these (maybe more than we think) might be automatic rather than the product of conscious will. It is still often not at all clear what the role of consciousness in such quick reactions is, so it is also not clear which of these agents should be held responsible. Despite these unclarities, Libet's findings, along with the work of his followers, might make some people more sympathetic and willing to excuse some minimal actions. Of course, some of these acts might be excused even without relying on Libet or any science at all, but at least Libet and related research can help us to gain better understanding of why such agents do not meet the requirements for responsibility and should be excused.[29]

What, then, does the law need to do in light of our improved understanding of minimal or automatic actions? Perhaps nothing. Sometimes the law already handles such cases well enough. However, where the law of criminal responsibility requires causation by conscious will, we need to think about various kinds of automatic or minimal actions to see whether the law yields the correct results. Various moves are available if an act does not seem to result from conscious will: Either (a) we cannot hold the person responsible at all or (b) we need to remove consciousness from the requirements for responsibility or (c) we need to specify that only general consciousness is required or (d) we need to stretch the "action" to include a prior voluntary act or (e) we need to reduce the legal effects of minimal or automatic acts (e.g., by mitigation). Which legal response is proper is a policy decision for society rather than a scientific issue that could be settled by Libet, but what Libet adds is a better understanding of these fascinating cases.[30]

NOTES

1. See the introduction to this volume for a brief discussion of some predecessors.
2. Although I focus on the voluntary act requirement, consciousness and will are also relevant to other legal standards for responsibility. One example is the defense of automatism, which some states define in terms of consciousness: e.g., "Automatism is the state of a person who, though capable of action, is not *conscious* of what he is doing." (*Fulcher v. State* 633 P.2d 142, 145 (Wyo. 1981)) Other examples are definitions of *mens rea* in Model Penal Code section 2.02, including: "A person acts purposely with respect to material element of an offense when: (i) if the element involves the nature of his conduct or a result thereof, it is his *conscious* object to engage in conduct of that nature or to cause such a result; and (ii) if the element involves the attendant circumstances, he is *aware* of the existence of such circumstances or he believes or hopes that they exist" (my emphasis). Awareness and consciousness are also required by the MPC definitions of acting knowingly and recklessly. And some formulations of the insanity defense (e.g., *Regina v. M'Naghten*, *Eng. Rep.* 718, 1843) require the agent to know (and, hence, be conscious of?) the nature and quality of his action order to be responsible. However, what is relevant according to these definitions is consciousness of elements other than will, and these definitions do not explicitly require causation by that consciousness. That is why I focus on the voluntary act requirement in the text.
3. *People v. Decina* 2 N.Y.2d 133, 157 N.Y.S.2d 558, 138 N.E.2d 799 (1956).
4. See Larry Alexander, "Reconsidering the Relationship among Voluntary Acts, Strict Liability, and Negligence in Criminal Law," *Social Philosophy and Policy* 7, no. 2 (1990): 84–104.
5. See Deborah Denno, "Crime and Consciousness: Science and Involuntary Acts," *Minnesota Law Review* 87 (2002–2003): 269–399.
6. See my "Word Meaning in Legal Interpretation," *San Diego Law Review* 42, no. 2 (2005): 465–492.
7. Compare the case of Cogdon discussed in Norval Morris, "Somnambulistic Homicide: Ghosts, Spiders, and North Koreans," *Res Judicatae* 29, no. 5 (1951): 29–30; and the case of *Regina v. Parks* 95 D.L.R.4th 27 (1992) discussed in R. Broughton et al., "Homicidal Somnambulism: A Case Report," *Sleep* 17 (1994): 253, 255.
8. Freedom and responsibility, like control, come in degrees. One person can be more responsible than another, even if neither is fully responsible.

When I discuss responsibility, I refer to full responsibility associated with acting purposely (see note 2), rather than minimal responsibility that is necessary for any person to be liable to any negative moral judgment or punishment. If Libet's work showed that agents are not fully responsible, that would be important and interesting even if his work did not undermine minimal responsibility.

9. See note 7 and the case of "sexsomnia" reported in http://news.bbc.co.uk/1/hi/england/north_yorkshire/4543340.stm
10. These cases are discussed in the introduction to this volume.
11. See Deborah Denno, "Crime and Conscious ness," note 5.
12. This challenge is discussed briefly in the introduction to this volume.
13. I plan to address this challenge from mechanism in a future paper.
14. This assumption is questioned by Stuart Hameroff, among others, but I do not have space to discuss that alternative here.
15. The importance of such side-effects is stressed by Daniel Wegner, *The Illusion of Conscious Will* (Cambridge, MA: MIT Press, 2002), chapter 9.
16. Libet claims that this veto (or choice to veto) is uncaused, but he gives no reason for this claim, and it is not necessary, since the real issue here is not determinism. Libet also assumes that agents have enough time to veto, but that is not at all clear. In addition, Simone Kuhn and Marcel Brass, "Retrospective Construction of the Judgment of Free Choice," *Consciousness and Cognition* (2008) argue, "the act of vetoing cannot be consciously initiated." Nonetheless, the possibility of veto at least shows that Libet's results do not directly entail any lack of freedom or responsibility. Additional premises or assumptions are needed before any philosophical lessons can be drawn from Libet's scientific results.
17. See Ebert and Wegner as well as Wheatley and Looser in this volume (chapters 12 and 13).
18. Pace Horgan in this volume (chapter 14).
19. Patrick Haggard and Martin Eimer, "On the Relation between Brain Potentials and Awareness of Voluntary Movements," *Exp Brain Res* 126 (1999): 128–133.
20. John Stuart Mill, *A System of Logic* (1843), chapters 8–10.
21. This volume and H. C. Lau, R. D. Rogers, and R. E. Passingham, "Manipulating the Experi enced Onset of Intention after Action Exe cution," *Journal of Cognitive Neuroscience* 19, no. 1 (2007): 81–90.
22. This volume and W. P. Banks and E. A. Isham, "We Infer Rather Than Perceive the Moment We Decided to Act," *Psychological Science* 20 (2009): 17–21.
23. See Mele, chapter 4, this volume.
24. In some experiments (such as Haggard and Eimer, "On the Relation between Brain Potentials and Awareness of Voluntary Movements"), subjects did decide what to do (such as which button to push) as well as when to do it, and similar results were found, but they still decided at the last moment for no reason. See also Pockett and Purdy, chapter 4 in this volume.
25. But see Pockett and Purdy, chapter 4 in this volume.
26. See the case of Huey Newton discussed by Gideon Yaffe in this volume, chapter 16.
27. *Fain v. Commonwealth* 1879: "a prosecution for murder of a defendant who had shot a hotel porter when the latter was attempting to awaken him . . . . he had been a sleepwalker since his infancy."
28. For example, imagine that a kleptomaniac finds his hand reaching out to take an item and then put in it his pocket before he can stop himself.
29. Of course, some such agents might be responsible because they should not have gotten themselves into the position where their unforeseen minimal acts could cause such harm, but that is a different issue that I will not address here. Here the point is only that, even if the agent is responsible indirectly by way of past acts, the agent is not responsible directly or fully.
30. Thanks to Adina Roskies for helpful comments on a draft and also to the audience at the University of Arizona.