How Free Am I?: Where Neuroscientific Experiments Can Lead Philosophy

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Chapter 1: An Introduction to the Contemporary Free Will Debate

What is Free Will?

The term "free will" can and does mean many different things in the contemporary Free Will debate. Each philosopher has his own definition and understanding of what free will is, but there are some common themes and traits that give a general framework of what is meant by free will. Free will tends to imply that humans are capable of making decisions and forming the intentions that drive these decisions forward. In order for humans to be free, we must be able to make significant decisions. If the decisions humans make have no influence on the outcome whatsoever, either because the outcome has been predetermined or our actions are inconsequential, then humans do not truly possess free will. Following the same line of logic, humans must be able to will or intend their actions to be free. If human action is the result of some cause other than the human's intent, then free will is not at work.

A theme that is brought up by many contemporary thinkers in the Free Will debate is the idea that free will also entails the ability to "inhibit and control" one's actions.[1] In order to truly be considered free beings, it seems that humans must be able to have a sort of vetoing power. Being able to change one's mind and to be able to direct one's action and intention after the initial formation are themes that are present in many philosophers' frameworks with regards to free will. Another condition that is extraordinarily important to the contemporary Free Will debate is that people must be able to *consciously* will things. They must be able to consciously

[1] This will become introduced to the debate as significant in the analysis of the Libet et al experiment. Adina L. Roskies, "How Does Neuroscience Affect Our Conception of Volition?" *Annual Review of Neuroscience* 33, no. 1 (2010): 110, accessed October 14, 2015, http://isites.harvard.edu/fs/docs/icb.topic889975.files/.

intend an action, be aware of their actions, be able to control their actions and be able to recognize their actions and decisions as results of their conscious willing.

There are a few terms that are oftentimes associated with free will and it is important to pay careful attention to what distinctions philosophers make between these terms. Volition and Freedom are two terms that are associated with free will, but the definitions of each vary according to the thinker. Many significant voices in the debate use the terms volition and free will interchangeably and it seems that others, even if they do not think that the terms are synonymous, believe there to be a strong connection between the two terms. Certain thinkers, such as Alfred Mele, use the term volition to strictly refer to the "decision or intention" behind an act, thus making volition a factor of free will but still not synonymous.[2]

The term freedom, on the other hand, is oftentimes acknowledged as a completely different idea than that of being free. "Under normal circumstances, we experience our voluntary actions as voluntary. Under abnormal circumstances, people may wrongly attribute, or fail to attribute, agency to themselves… we should not conclude that, in general, feelings of agency do not reflect actual agency."[3] To many in the contemporary debate, the term freedom strictly refers to the *feeling* of being free while free will is what it means to truly be free, regardless of what one feels. It is important to understand that being autonomous does not necessarily equate to feeling as if one is autonomous. Some believe that there is a significant connection between the two terms while others assert that the feeling of freedom is not a crucial factor when it comes to understanding what free will entails. Furthermore, it is important in terms of the debate to be

[2] Ibid.

[3] Ibid., 123.

aware of the common themes and the areas of distinction between all of the definitions of free will in the contemporary debate.

The Three Main Stances

There are many philosophers, scientists, and thinkers from other disciplines who have taken a stand on the issue of whether or not humans possess free will. Generally, these views can be placed into two main categories - Incompatibilism and Compatibilism. Incompatibilists are convinced that free will cannot exist "if determinism is true."[4] There are two subcategories of Incompatibilism, which are Libertarianism and Determinism. Libertarians essentially deny that anything is determined and thus assert that humans are free. Determinists assert that all events in life, including human actions, are determined. To a determinist, "every event is fully specified by the state of the universe and the natural laws; there is a denial of truly random or probabilistic processes."[5] Thus, humans are not free and do not possess free will. Compatibilism takes the stance that humans are free although there are situations, events, and instances in which human behavior is determined by things other than human intention or human will.

In Sam Harris' book entitled *Free Will*, he gives a short description of the three camps of thought:

> In the philosophical literature [on free will], one finds three main approaches to the problem: *determinism, libertarianism, and compatibilism*. Both determinism and libertarianism hold that if our behavior is fully determined by background causes, free will is an illusion. Determinists believe that we live in such a world, while libertarians imagine that human agency must … rise above the plane of physical causation. Libertarians sometime invoke a metaphysical entity, such as a soul, as the vehicle for our freely acting wills. Compatibilists, however, claim that

[4] Ibid., 111.

[5] Ibid.,112.

> determinism and libertarians are both confused and that free will is compatible with the truth of determinism.[6]

Although satirical, Harris brings up some valid concerns and considerations within these categories of ideologies. He suggests that there is some difficulty in defending the libertarian approach, and this has proven to be true in the debate. In the contemporary philosophical debate with regards to free will, libertarianism is the least common of the viewpoints and is oftentimes looked upon as the least compatible with scientific findings although there are some very legitimate libertarian stances.

Hard determinism asserts that all events and human action are determined by causes that make humans mere puppets in the marionette show of life. Compatibilists take on the difficult task of defending the stance that humans are free even though certain things in the world are determined. However, if humans are free and do possess free will, then how are we free in the times that worldly events, sometimes even our actions, are determined by outside causes? Drawing this line and defending this viewpoint oftentimes results in the critique that these philosophers appear to say that there are times in which humans have free will and are free, and times that we do not. It is also worth noting that philosophers in this debate can take a dualistic approach with their view, regardless of their overall stance, in which they assert that "the physical and mental belong to two fundamentally different ontological categories, and cannot be reduced to one another."[7] The variations in the traditional three stances of this argument are complex, and the best way to illustrate the nuances of the three is to follow through the logic of a

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[6] Sam Harris, *Free Will* (New York: Free Press, 2012), 16.

[7] It is worth noting that dualism is not very commonly used in the frameworks of modern thinkers in the Free Will debate. Adina L. Roskies, "How Does Neuroscience Affect Our Conception of Volition?" *Annual Review of Neuroscience* 33, no. 1 (2010): 111, accessed October 14, 2015, http://isites.harvard.edu/fs/docs/icb.topic889975.files/.

few contemporary philosophers who are considered advocates of determinism, compatibilism, and libertarianism.

Example 1: Harris' Deterministic Approach to Free Will

The determinist Sam Harris is one who seems to hold an "all-or-nothing" concept of free will. In his short novel *Free Will*, he places his understanding of free will very much in the classic argument of determinism versus free will. He claims,

> Today, the only philosophically respectable way to endorse free will is to be a compatibilist - because we know that determinism, in every sense relevant to human behavior, is true. Unconscious neural events determine our thoughts and actions - and are themselves determined by prior causes of which we are subjectively unaware. However, the "free will" that compatibilists defend is not the free will that most people feel they have. Compatibilists generally claim that a person is free as long as his is free from any outer or inner compulsions that would prevent him from acting on his actual desires and thoughts. If you want a second scoop of ice cream and no one is forcing you to eat it, then eating a second scoop is fully demonstrative of your freedom of will. The truth, however, is that people claim greater autonomy than this.[8]

He makes it clear that he defines free will as the power to freely make decisions and form intentions that lead to significant actions. In the ice cream example, he demonstrates how he does not think that this is possible. Essentially his argument is that our lives unfold in such a fashion that it is through a series of external and internal determined events that a person would find herself in the ice cream shop. Eating ice cream then becomes the inevitable, determined cause of this series of events. Although the amount and flavor of ice cream she orders may be the result of more spontaneous desires and thoughts, the significance of the freedom in this versus the freedom that would have resulted if the being in the ice cream shop was a completely free decision is insignificant.

[8] Sam Harris, *Free Will* (New York: Free Press, 2012), 16.

The train of thought then goes on with the idea that the most important factors when it comes to forming and carrying out decisions and actions are determined, and therefore humans do not truly have a free will. They possess a sort of watered down, less significant version of a powerful, absolute free will that does not make them free at all. The almighty free will that can overcome internal and external forces with conscious decision-making is what most people believe to have, but according to Harris this is not actually attainable. Therefore, the only way to compensate for that besides giving in to the notion that one does not have free will is to radically adapt one's definition of free will to account for deterministic events. The people who adapt are the compatibilists while those who stay to the traditional meaning of free will remain determinists.

Example 2: Dennett's Compatibilist Approach to Free Will

Philosopher Daniel Dennett is a prominent figure in the current Free Will debate and he is infamous for his compatibilist stance. He is known for his integration of biology and computer science in his philosophical frameworks, especially with regards to free will. He believes that humans have evolved to have a free will and that human characteristics such as intelligence, morality and other evolutionary traits naturally allow humans to exert a free will in a world where deterministic forces are at play.[9] He asserts that the incompatibilist view of free will oftentimes leads to explaining away, instead of explaining, free will and claims that this is in part due to a misconstrued sense of what free will is.

In a talk he gave at the Santa Fe Institute, Dennett effectively warned people against having an abstract, unrealistic view of free will. If the idea of free will is going to be effectively addressed, then a grounded and realistic understanding of free will must be at the core. Many believe that free will is an attribute of the human soul, exempt from the laws of nature. While

[9] Daniel Dennett, *Freedom Evolves* (New York: Viking, 2003), pgs 21, 188.

people keep this idea as what it means for free will to be "real," many people in western society are also aware that there has been significant progress in the mapping and comprehension of neural activity. It is understood that the brain controls how humans experience life and dictates how decisions are made. It is because of this breakthrough in the understanding of how human cognition works that recent work in philosophy has used neuroscientific experiments and elements of cognitive science to better understand if free will exists, and if it does, how it works.

Dennett is a supporter of the naturalism perspective, which places an emphasis on how philosophy and scientific knowledge should work together on equal terms to achieve "a single version of the universe."[10] Thus, when he contemplates the nature of free will, he believes that we must be realistic or practical about what it entails. There are events that are caused by things that are out of human control, and there are factors that cause action and determine the outcome of certain situations. In the book *Freedom Evolves,* Dennett explains his belief that humans have evolved over time in such a way that different natural, internal mechanisms were shaped to be able to thrive in the midst of deterministic forces such as natural and physical laws. These mechanisms were shaped to allow the free will of humans to have as much power as they could be considering the circumstances. People cannot control everything in their surroundings, but they can choose to act based off of "their own reasons."[11] It is not that there is no such thing as free will, but rather that it takes a form that people may not initially expect, and must be willing to accept and explore.

This is a classic compatibilist stance on the Free Will debate because it acknowledges that there are deterministic factors and events in the world, but still holds that the idea of free will can thrive nonetheless. It is at this point that careful construction of the definition of free

[10] Ibid., 15.

[11] Ibid., 187.

will and what it means to be free becomes of the utmost importance. As demonstrated by Philosopher Daniel Dennett, compatibilism is often a balancing act in which the melding of two very different ideas - free will and determinism - have to be delicately handled and put together in a cohesive framework.

Example 3: Kane's Libertarian Approach to Free Will

Philosopher Robert Kane is a prominent libertarian in the contemporary Free Will debate. His theory of free will involves a radical re-thinking of many of the facets, assumptions, and definitions held by many compatibilist and determinist thinkers. In his essay "Free Will: New Directions for an Ancient Problem," he goes about formulating his framework on free will by addressing considerations as to why one would desire an undetermined free will or at least strive for accepting the possibility thereof.[12] He begins his essay with a quick explanation as to what his definition of free will entails:

> I think that those of us who believe that free will is incompatible with determinism- we incompatibilists and libertarians so-called- should simply concede this point to our compatibilist opponents. Many kinds of freedom worth wanting are indeed compatible with determinism. What we incompatibilists should be insisting upon instead is that there is *at least one* kind of freedom worth wanting that is incompatible with determinism. This significant further freedom, as I see it, is '*free will,'* which I define as 'the power to be the ultimate creator and sustainer of one's own ends or purposes. To say this further freedom is important is not to deny the importance of everyday compatibilist freedoms… it is only to say that human longings transcend them.[13]

It is evident that he has chosen to use the terms "free will" and "freedom" interchangeably, although it does seem that he follows in the tradition of other philosophers in integrating the idea of the *feeling* of being free in the idea of freedom. In this assertion, he makes it clear that he

[12] Kane "Free Will: New Directions for an Ancient Problem" 223

[13] Robert Kane, *Free Will: New Directions for an Ancient Problem*. (Malden, MA: Blackwell Publishers, 2003), 223.

believes that compatibilist ideas can apply to aspects of the world and human freedom, but that in its entirety, the random events and chaotic nature of certain things makes the world and free will both undetermined.

Robert Kane follows the incompatibilist tradition and does not believe that determinism and free will can coexist in this world. He believes in free will, and thus believes that determinism is ultimately false. He asserts that the world and human behavior are riddled with undetermined factors. Things that people normally attribute to chance or luck are indicators of something random at play in the world. These undetermined elements can cause action, motion, and results in the world. However, since the world is moved by things that are undetermined, the results caused by these factors are also undetermined by nature.[14]

Kane is also one of the philosophers who brings forth the idea of moral responsibility as an important component to free will. Even in a world where things are not determined, people can still be held morally responsible. This is made possible by his definition of free will as made clear in this example:

> Consider an assassin who is trying to shoot the prime minister, but might miss because of some undetermined events in his nervous system that may lead to a jerking or wavering of his arm. If the assassin does succeed in hitting his target, despite the indeterminism, can he be held responsible? The answer is clearly yes because he intentionally and voluntarily succeeded in what he was *trying* to do-kill the prime minister. Yet his action, killing the prime minister, was undetermined[15]

Since the man was acting of his own free will - he intended for the action to happen and accomplished the action by overcoming undetermined forces - he can be held fully responsible for what has resulted from his will.[16] The assassin possesses a sort of freedom that allows him to

[14] Ibid.

[15] Ibid., 229.

[16] Ibid.

act in spite of what Kane considers to be undetermined forces - whether they be chaotic and random forces of the mind, body, or world. The power of Kane's free will is that it allows one to overcome that which is undetermined and that which causes events in the world to happen. Thus, individuals in the world possess a sort of freedom that does allow for them to overcome the obstacles of chance and randomness, but at the price of responsibility regardless of whether or not the outcome is what they originally intended.

Philosopher Robert Kane is a strong voice for the libertarian category, and he upholds their basic tenets in a cohesive framework. Evidently, his philosophy is not without its challenges and particularities. Once again, it becomes evident that in order for this stance to take hold, a very particular definition of free will is created and defended. A point of clear contention in the debate is whether or not events in the world are determined, undetermined, or contain elements of both categories. As the traditional debate stands, there seems to be extraordinary difficulty in finding definitive proof as to what can be considered determined or undetermined in the world. This is one of the ways that Philosophy, at least on its own, appears to come up short. It then makes sense that philosophers have welcomed the assistance of other disciplines that, at least at first glance, look to be able to give the proof needed to solidify or definitively disprove the perspectives in the Free Will debate.

Neuroscience and Free Will

A debate that has been going strong since the time of Descartes, the Free Will debate has been a hot topic for philosophers and has had an astounding amount of research and work put into it. Unfortunately, the only thing that many philosophers, past and contemporary alike, seem to be able to agree upon is that the debate has not gotten very far at all. In light of this, other

academic areas outside of Philosophy have acted as supplements and guides to the argument in hopes of being able to provide the information necessary to finally further the debate.

One of the most interesting paradigms in the Free Will debate was the time period in which Mathematics was looked upon as the key to solving the puzzling question of free will. If mathematics could explain the universe, then surely it would be able to provide useful in determining whether or not the world was deterministic. However, problems such as unknown constants and limited mathematical explanations for the happenings of the universe proved to be issues for the Free Will debate. At another point in time quantum mechanics was looked upon as the potential answer to the Free Will debate. However, unknown variables and theories that could not be proven were problematic to the debate and raised more confusing questions than solid proof for or against free will. The current paradigm of the Free Will debate seems to be drawing on neuroscience for information as to how the mind works. It seems that the key to the free will problem lies in understanding how the mind works, how the mind controls the body, and how humans are built to respond to and interact in the world.[17]

In the recent past, philosophers have turned to neuroscientific experiments as sources of data from which to prove and disprove theories of free will. Innovative experiments such as the ones performed by Libet et al in 1985, Soon et al in 2008 and Wegner et al in 2004 have been used to strengthen stances on the topic of free will, and have become associated with the general, rigid frameworks of Determinism, Libertarian and Compatibilism. The integration of neuroscientific and cognitive experiments in the Free Will debate have also given rise to new, viable perspectives, some of which stand slightly apart from the traditional three categories.

[17] "The History of the Free Will Problem," The Information Philosopher, Accessed October 4, 2015, http://www.informationphilosopher.com/freedom/history/.

There are new challenges and concerns to integrating neuroscientific findings with philosophical insights. "While most philosophers seem willing to agree that neuroscientific research has strong implications for the free will question, there is significant disagreement as to what the implications are."[18] The appeal of neuroscience is the fact that it allows people to understand what parts of the brain correspond to or create what kinds of responses. Philosophers are given the luxury of looking into the mechanisms behind human behavior. However, there is still much question as to what this knowledge means. Thus, the difficulty comes from the question of how to translate the electrical signals and chemical reactions in the brain into philosophical frameworks on free will. In this chapter, a few of the experiments that have proven influential and crucial in the current debate will be examined and its influence in the debate will unfold in chapters two and three.

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Example 1: The Libet et al Experiment

The infamous Libet experiment has caused much controversy in the contemporary Free Will debate. In the experiment, participants were asked to look at a clock-like device - there were numbers inside a circular surface, similar to the face of a clock, and there was something reminiscent of a minute or second hand in the device that rotated and passed the numbers at a

[18] Stephen G Morris, "The Impact of Neuroscience on the Free Will Debate," *Florida Philosophical Review* 9, no. 2 (2009): 56, Accessed November 10, 2015, http://philosophy.cah.ucf.edu/fpr/files/9_2/morris.pdf.

certain speed in a clockwise fashion. The brain activity of the participants was monitored as the participants were asked to spontaneously push a button and then make a mental note as to what number the clocklike device indicated once the button was pushed. The participants were warned not to anticipate pushing the button or to decide to push the button once the clocklike device pointed to a certain number.[19]

Libet studied the recorded brain activity and the times at which the participants pressed the button versus reporting awareness of having made the decision to press the button. He found that the time it took for the participants to press the button after they reported becoming consciously aware of their decision to press the button was approximately 200 milliseconds. He also found that, according to his recordings of neural activity during the experiment, that electrical signals to set the action in motion preceded the action of pressing the button by approximately 350 milliseconds. What Libet took this to mean was that there was an unconscious decision to press the button that occurred before the participant was even consciously aware of it.[20]

After the results of this experiment were published and spread amongst the thinkers examining the question of free will, there was a trend in which they would refer to the results of the Libet experiment as proof that the brain initiated action or that decisions were made before one was conscious that one had made the decision. This was considered an especially provocative finding because what many in the contemporary Free Will debate hold to be true is that free will entails being conscious of one's decision and furthermore, making decisions

[19] Benjamin Libet, "Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action," *Behavioral and Brain Sciences* 8, no. 4 (1985): 531.

[20] Ibid., 532-3.

consciously. Thus, the major point of controversy was the possibility that significant human decisions to act could be done unconsciously.

> Philosophers are particularly divided over what conclusions should be drawn from Benjamin Libet's (1985) experiments indicating that automatic unconscious brain processes are responsible for producing the behaviors performed by test subjects. Much recent discussion has centered around psychologist Daniel Wegner, who argues that such experiments cast doubt on the ability of our consciousness to play any role whatsoever in producing our behaviors. Since philosophers tend to believe that free will requires that conscious decision-making plays some role in generating actions, many believe that Wegner's conclusion, if true, would render free will impossible for human beings. In their efforts to defend free will, some philosophers have argued that neither Libet's experiments nor other recent discoveries in neuroscience have demonstrated that consciousness is causally inert.[21]

It is interesting to note, then, that when one looks at Libet's concluding statements in the laboratory report, Libet makes it very clear that he does not believe that his results indicate anything significant about the nature of the human will. He claimed that his experiment was not designed with the parameters fit to enable any accurate information about the relationship between human will and consciousness to come forth. He believed that "simpler experiments" with appropriate parameters were necessary for that.[22] In fact, after reading the reviews that fellow scientists and philosophers made about the nature of the will after extrapolating from his experiment, Libet commented that the "speculations and theories not based on experimental data directly relevant to the experience of conscious intention have thus far provided little more than representations of personal philosophical viewpoints."[23]

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[21] Stephen G Morris, "The Impact of Neuroscience on the Free Will Debate," *Florida Philosophical Review* 9, no. 2 (2009): 56, Accessed November 10, 2015, http://philosophy.cah.ucf.edu/fpr/files/9_2/morris.pdf.

[22] Benjamin Libet, "Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action," *Behavioral and Brain Sciences* 8, no. 4 (1985): 563.

[23] Ibid.

There was a follow up experiment that had the same setup as the original experiment, and the participants were still asked to randomly decide to push the button. The only caveat in this experiment was that after making the decision and starting the motion of pushing the button, the participants were asked to stop and refrain from pushing the button. Essentially, the participants were asked to make a decision and then retract at the last second. What the results of the experiment showed were that although the recorded electrical signals from the brain were the same as before, the participants were able to stop from carrying out the action. Libet referred to this finding as "veto control." [24] Thus, the theory of "free won't" came about.

The theory of "free won't" was an interpretation of the Libet experiments that basically stated that an individual could not make a decision to act consciously, but that an individual had the power to consciously veto or stop decisions to act that were made unconsciously. This is not a popular stance in the contemporary free will debate, but it is one brings about important consideration to the question of the nature of the consciousness.[25]

The Libet experiment was instrumental to the contemporary Free Will debate in that it raised the critical question of the relationship between the consciousness and free will. Arising from this are further questions regarding the relationship between the consciousness and unconsciousness as well as the nature of the process by which humans make decisions. Are the

[24] Ibid., 538.

[25] Many thinkers have openly discussed "free won't" as a viable option. However, after much experimentation, it seems that the general consensus is now that it is no longer considered a possible explanation of free will. "But from the standpoint of physics, instigating an action is no different from vetoing one, and in fact involves the same regions of the brain." Thus, the same problems that was met with defending free will in this scenario are present in the examination of "free won't." Coyne, Jerry A. "Column: Why You Don't Really Have Free Will." USATODAY.COM. January 1, 2012. Accessed February 20, 2016. http://usatoday30.usatoday.com/news/opinion/forum/story/2012-01-01/free-will-science-religion/52317624/1.

chemical reactions in the brain that lead to unconscious and conscious activity merely mechanisms for human decision-making or are they the causes?

Example 2: The Soon et al Experiment

The Soon et al Experiment was another popular source of information for philosophers developing their theories on free will. In this experiment, participants were asked to press left or right buttons when a certain image on a screen appeared. Like the Libet experiment, the pressing of the button was supposed to be spontaneous and random. The specific setup and instructions given to the participants were as follows:

> Subjects viewed a letter stream that was updated every 500 milliseconds (shown here only for a few frames). At some point they spontaneously made the decision to press either the left or right button using their corresponding index finger (free response). Subsequently, they were presented with a response-mapping screen that instructed subjects as to which second button to press to report the time at which they consciously made the motor decision.[26]

This was a slightly more sophisticated version of Libet's experiment. Unlike Libet's experiment, participants were asked to choose between pressing either the right or the left hand button. There were two major factors being recorded in this experiment. The first was the time it took for the participants to become conscious of the decision to press either the left or the right button. The second was the button that the participant decided to press.

While this experiment was going on, information was being collected with the help of fMRI (functional magnetic resonance imaging) in order to pick up on neural activity during the participants' decision-making process. What became apparent was that the frontopolar and parietal cortex were activated when the participants were deciding which button to press (left or

[26] Chun Siong Soon, Marcel Brass, Hans-Jochen Heinze, and John-Dylan Haynes, "Unconscious Determinants of Free Decisions in the Human Brain," *Nature Neuroscience* 11, no. 5 (April 13, 2008): 543-4, http://www.nature.com/neuro/journal/v11/n5/full/nn.2112.html.

right).[27] This was done until the experimenters decided to try to see if they could predict which button the participant would press based off of fMRI data and which parts of the brain were activated.

The result was that the experimenters were able to come up with a prediction of whether the participant would press the left or right button about "7-10 seconds before the participant's decision was consciously made."[28] The predictions made by the experimenters based off of this data were about 60 percent accurate. To put this in perspective, if a random person were to guess which button the participant would choose each time, the random person would be correct, on average, about 50 percent of the time. If that person was a bit lucky in his guessing, they would reach about the same percentage as the experimenters. Thus, the "predictive success of the experimenters was only slightly above chance."[29]

This experiment caused a lot of discussion amongst philosophers in the Free Will debate. A few philosophers took the results of the predictive portion of the experiment to mean that scientists had achieved a high level of accuracy in their predictive studies. According to compatibilist Daniel Dennett, "this [Soon's] experiment proves that we can predict behavior."[30] However, the results of the experiment proved to be far from proof that scientists had found a way to predict human behavior, so why were well known philosophers making these bold

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[27] Adina L. Roskies, "How Does Neuroscience Affect Our Conception of Volition?" *Annual Review of Neuroscience* 33, no. 1 (2010): 116, accessed October 14, 2015, http://isites.harvard.edu/fs/docs/icb.topic889975.files/.

[28] Ibid.

[29] Ibid.

[30] Daniel Dennett, *Is Free Will an Illusion? What Can Cognitive Science Tell Us?* YouTube Video, Santa Fe Institute, May 17, 2014, https://www.youtube.com/watch?v=wGPIzSe5cAU.

claims? It seems that one of the issues with drawing upon neuroscientific evidence is the misinterpretation of results and data.

Furthermore, this portion of the experiment also calls into question the possibility that the mapping of neural activity can one day lead to accurate predictions in human behavior. What would that mean about the nature of free will? If conscious human decisions can be predicted before the human is conscious of his decision, does that mean he is not free or does not possess free will? Or, does it merely indicate that the decision-making process in humans is mechanistic and that the mechanism by which decisions are made can be understood? If that is the case, then it does not necessarily mean that just because it is mechanistic that it is deterministic. The mechanism may be the method, and not the cause.

Another question that this experiment raises is about the nature of free will. Both the Libet and Soon experiments tested for fairly inconsequential, short-term decisions. Something that is made absolutely clear in the Free Will debate is the complexity of the nature of free will. Does one's capacity to make long-term decisions, decisions with regards to moral responsibility, or decisions made under extremely stressful circumstances relate to the information provided in these experiments? It seems that perhaps these experiments need to be very carefully examined in terms of the type of decision that is being tested.

Example 3: The Wegner et al Experiment

Philosopher Daniel Wegner conducted a series of three experiments in 2004 that were designed to test vicarious agency in a few scenarios. More specifically, these experiments "tested the influence of foreknowledge of action on vicarious agency in normal participants."[31]

[31] Daniel M Wegner, Betsy Sparrow, and Lea Winerman, "Vicarious Agency: Experiencing Control Over the Movements of Others," *Journal of Personality and Social Psychology* 86, no. 6 (2004): 840.

Vicarious agency, as defined in the experiment, is "the feeling of authorship for the actions of others."[32] The experiments were intended to explore the idea that humans have the capacity to project their will or their consciousness onto entities that are not under their control or agency. If an entity behaved in such a way that we were expecting, is it possible that humans can mistakenly, through the projection of their knowledge and agency, mistake a foreign entity as being an extension of their consciousness or under their control?

In the first experiment, participants were paired and each pair consisted of one person randomly assigned the role of the hand helper and the other was assigned the role of the participant. Participants were placed in front of a full-length mirror and given gloves to wear. Their hands were placed at their sides and then they were given smocks that covered their arms and upper bodies. The hand helpers put on gloves, stood behind the participants, and put their arms through the sleeves of the smocks so that their arms looked like they belonged to the participant. Both the participant and the hand helper wore headphones. Hand helpers were all told that they would hear instructions through the headphones while some participants heard instructions and others did not. Essentially, these instructions were to act as cues for the hand helpers to know what to do with their hands and for some of the participants to be able to know what to expect from the arms. The instructions consisted of statements such as "lift the left arm" and the hand helpers did as the instructions dictated.[33]

At the end of the experiment, the participants were told to fill out a survey in which they would rate their experience, and indicate whether they felt that they had control over the arms or if they felt that they could anticipate what the hand helper's arms would do. The results of the experiment suggested that the participants who heard the instructions on the headphones felt that

[32] Ibid.
[33] Ibid.

they were able to anticipate the movement of the arms more than the participants who did not hear instructions. The participants who heard the instructions also reported a heightened sense of control over the arms than the participants who did not hear instructions.[34]

In the second experiment, instructions also included elements such as having the hands snap the gloves, which would result in a physical sensation to the arms of the person wearing the gloves. Instead of only having two groups of participants - the participants who heard instructions and those who did not - there were three groups of participants in this experiment. The first group heard the correct verbal instructions, the second group heard incorrect instructional previews, and the third heard no verbal instructions at all. The group that heard the correct verbal instructions reported a higher value for the anticipation of what the arms would do than the other two groups did. The other two groups did not vary much in their reports of how much they felt that they were able to anticipate in terms of the hands' movements. The study also indicated that the participants with incorrect verbal previews found the arms to be "more annoying" than the other two groups.[35]

The final experiment tested two parameters: timing and imitation versus distraction. There were three groups of participants in terms of timing: some participants heard the instructions before the arms moved (about 3 seconds early), some participants heard the instructions at the same time that the hands moved, and the last group of participants head the instructions after the arms moved (about 3 seconds later). The participants who heard the instructions at the same time that the helper's hands moved were divided into two groups. The first group was instructed to make some small movement with their arms that mimicked the

[34] Ibid., 840-1.
[35] Ibid., 842.

movement that they heard being instructed. The second group was instructed to move their own arms in a movement completely different from the instructions.[36]

The results of the experiment indicated that the participants who heard the instructions before the hands moved reported feeling the greatest amount of anticipation of the movement of the arms versus the other two groups. The results for the second variable were a bit more interesting:

> It was found that participants instructed to make their own subtle movements consistent with the instructions showed an enhanced level of vicarious agency but that these movements were not necessary for previews to enhance such agency. Participants who were instructed to make distracting movements inconsistent with the previews still tended to report a vicarious control experience. The feeling of moving another person's hands, in sum, was not dependent on participants' ability to move their own hands in the same way.[37]

These last findings in the experiment are extraordinarily interesting because it was found that these two groups felt that they had some sort of control over arms that did not belong to them. It would seem, from the results of this experiment, that it is not unreasonable to think that in certain situations people project their will onto actions or entities that are not at all under the control of that individual's decisions or volition. This begs a few pressing questions: How often do people mistakenly project their will onto elements of the world? What if humans assign human agency and individual control to many events and occurrences that are out of their control? What does this mean about free will as we understand it versus how it actually manifests?

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[36] Ibid., 845.

[37] Ibid.

New Stances on Free Will

The integration of neuroscientific research in the problem of free will has produced some interesting perspectives in the debate. Philosophers and thinkers with an extensive background in neuroscience and cognitive science have stepped forward with their own theories and takes on the idea of free will. Some of these transcend the traditional three categories typically held in the debate - Compatibilism, Determinism, and Libertarianism - and instead question or entirely rework the basic questions and assumptions of the debate. Philosophers such as Adina Roskies, Eddie Nahmias and Daniel Wegner have either stood apart from or taken further the traditional stances in the free will debate by looking at the idea of the mechanism versus the more "traditional" idea of a cause.

It is also important to note that a thinker does not need to abandon whatever preconceived notions she has of a philosophical concept, but rather needs to be able to entertain thoughts contrary to her intuition. Philosopher Adina Roskies wrote a short yet insightful piece in response to the findings of fellow Philosophers Sie and Wouters and their interpretations of psychological and neuroscientific findings, in which she reminds her audience of the necessity of an open and willing mind when it comes to philosophy. "Sie and Wouters' arguments serve as a useful reminder to philosophers that their work can and should be sensitive to the findings of both psychology and neuroscience, although it is by no means clear that these findings will undermine, rather than improve, compatibilist views on freedom and/or responsibility."[38]

Another element that must be taken into consideration after the integration of neuroscientific findings into this philosophical debate is one that is emphasized by philosophers such as Eddie Nahmias and Adina Roskies - what neuroscience reveals are the mechanisms that

[38] Roskies, Adina L. "Response to Sie and Wouters: A Neuroscientific Challenge to Free Will and Responsibility?" *Trends in Cognitive Sciences* 12, no. 1 (January 2008): 4. http://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(07)00277-X.

are at play in the human mind. What this raises is the question of mechanism versus causation. A mechanism is not necessarily a cause but can be an explanation as to how something works. Two major and highly influential viewpoints that stem from this issue in the contemporary Free Will debate are: 1. The human brain determines all action and is therefore cause of human action and decision-making 2. Exploration of the brain and neuroscientific information lead to understandings of the mechanisms at play which are not at all equivalent to causes of what philosophers consider to be free will. Such is the foundation for the contemporary Free Will debate- nuanced, complex, and truly interdisciplinary.

Chapter 2: The Significance of Neuroscientific Experiments

Neuroscientific Experiments and the Free Will Debate

A crucial component of this debate is how thinkers participating in the Free Will debate incorporate major neuroscientific experiments and findings into their theories and philosophies regarding free will. Neuroscientific experiments have the potential to be the means by which aspects of free will can be measured, tested, and understood. This potential is muddied when the data or results are misinterpreted. This can become a source of confusion since there is a spectrum of interpretations for each major neuroscientific experiment. A few common themes and general conclusions can be drawn for each, but ultimately the individual philosophies that have come about vary fundamentally from thinker to thinker.

Three neuroscientific experiments that have proved influential in the contemporary Free Will debate are the Libet et al experiment, the Soon et al experiment, and the Wegner et al "Helper Hands" experiment. The purpose of this chapter is to address the nuances, complexities, and larger implications of these experiments as seen in some of the philosophical frameworks of important figures in the debate. Thus, philosophers and scientists who have looked at the experiments in terms of the parameters, experimental setup, and data accumulated have put forth many ideas and assertions worth further examination and consideration. These neuroscientific experiments are the lifeline of the conversation, providing valuable information for the thinkers to feed upon and keep important conversations alive and construct new ideologies.

The Libet et al Experiment

Sam Harris is an active neuroscientist and passionate voice in current debates who heavily draws upon the results of the Libet experiment for his philosophy of free will. He claims that, after examining Libet's experiment, "one fact now seems indisputable: Some moments before you are aware of what you will do next - a time in which you subjectively appear to have complete freedom to behave however you please - your brain has already determined what you will do. You then become conscious of this "decision" and believe that you are in the process of making it."[39] Therefore, according to Harris, the Libet experiment provides definite proof, beyond a shadow of a doubt, that all things are determined.

This view supports the general view that the neural processes that occur without our conscious awareness with regards to our decision-making are indications of a lack or absence of free will. It is generally the case that the notion that free will is expected to be at work only when people can consciously make significant decisions and carry out substantial actions. If actions stem from the unconsciousness, then it may be considered the case that the decision was not consciously intended, but rather the result of internal forces. In this case internal forces are biological or physical factors of one's body that produce actions without one intending the action while conscious or fully aware of having intended that action. The implication is that if one is not consciously intending the action, then the action is a result of some force that is not under the control of one's intentions.

Internal forces would be any force working within one's mind or body that is out of conscious control and external forces would be any force working outside of one's mind and body (i.e. natural disasters) that is out of one's conscious control. Internal and external forces are

[39] Sam Harris, *Free Will* (New York: Free Press, 2012), 9.

different by nature, as one stems from the world around humans and one originates from the biochemistry of the individual. Both in certain respects can help develop the habits and preferences of an individual (although one can argue that internal forces have more influence as far as those are concerned), but ultimately both can be navigated through with one's free will, according to the compatibilist perspective. Decisions made by the brain may be viewed as a decision stemming from the individual, according to a scientific perspective, but a philosophical lens brings to light the idea of a free will in which one is actively exerting one's will and is conscious of the exertion of her will. Thus, it is imperative this question of the relationship between consciousness, internal and external forces, and free will be addressed through a philosophical manner since this is not a question for science.

In an interview with the dynamic thinker Adina Roskies on the podcast program *Philosophy Bites*, she briefly discussed the Libet experiment and why the results most philosophers and scientists were pulling from the experiment might be problematic to the debate. She explained that if you look carefully at the experiment, the data merely indicates that one's brain sends the signal to the rest of the body before one is aware about being aware of this event.[40] What she was referring to in particular was the 300 or so milliseconds it took, as Libet reported, the unconscious decision to become a conscious awareness of that decision. Essentially what Adina Roskies was asserting was that the time gap, which is also referred to as the readiness potential, was measured based on one's indicating of being aware of having made a conscious decision as oppose to one's being aware of having made a conscious decision.

It takes time for the brain to send a signal to the mouth to articulate one's awareness of having made a decision and to the hand to carry out the action that has been consciously or

[40] Adina Roskies, "Neuroscientific Challenges to Free Will and Responsibility," *Trends in Cognitive Sciences* 10, no. 9 (2006): 421. http://www.dartmouth.edu/~adinar/CV_files/TICS free will & MR.pdf.

unconsciously intended. Therefore, there is a very real and likely chance that the Libet experiment described participants becoming aware of being aware of having made a decision. The crucial factor that Roskies addressed in her session on *Philosophy Bites* was the idea that Libet's labeling of the neural events taking place before, during, and after the readiness potential were inaccurate and cannot be determined strictly through fMRI readings. Therefore, the decision to act may have been done consciously, but the misreading of experimental data may have led to the thinkers excluding that possibility.

Philosopher Daniel Dennett addresses the complexities of the Libet experiment in his book *Freedom Evolves*. One of the important points in Dennett's analysis of the Libet experiment deals with the assumption that Libet was able to record neural activity that represented the coming about of consciousness of one's making a decision to act. The Libet experiment is understood as recording approximately 300 milliseconds between the time the participant makes an unconscious decision to act and becomes consciously aware that she has made the decision to act. However, Dennett thought a bit more about what the participants were asked to do in the experiment and came up with a different theory. Along with being asked to make a decision to act and to signal awareness of that decision to act, the participants were also asked to glance at the face of the clock-like device and take note of the number on the face of the device when they become aware of having made the decision to act.

With this in mind, Dennett put forth the question of whether or not the time gap recorded by Libet purely records the signals of the awareness of making "the decision to flick [move the hand]" or, could it also take into account the decision to observe the "clock-face orientations?"[41] What Dennett is point out is that there are multiple actions and decisions occurring in the short

[41] Daniel Dennett, *Freedom Evolves* (New York: Viking, 2003), 232.

timespan of the readiness potential. This emphasizes the necessity of clear parameters and variables in an experiment. The participant anticipates making a few distinct and different actions throughout the course of the experiment therefore it is doubtful that the neural signals recorded in the 300 milliseconds belong to one specific action or event in the experiment.

Ultimately, Dennett does not believe that the results of the Libet experiment are clear-cut, especially considering the many neural activities and the multiple areas of the brain activated in such a short amount of time. After much consideration, he comes to the following conclusion:

> Then we can see that out free will, like all out other mental powers, has to be smeared out over time, not measured at instants. Once you distribute the work done by the hounuculus (in this case, decision-making, clock-watching, and decision-simultaneity-judging) in both space and time in your brain, you have to distribute the moral agency around as well.[42]

Not only were the parameters of the Libet experiment limiting, according to Dennett, but there are other important parameters that should be included and other factors that could potentially be tested for. For example, the type of decisions being made in the Libet experiment is not of the same nature as the typical decisions that people make throughout their lives (i.e. non-premeditated, short-term, long-term). Since the Libet experiment was designed with the intention of examining spontaneous, instantaneous decisions with no significant future consequence, the question then becomes something along the lines of how representative is the Libet experiment of decisions that people tend to make?

Many thinkers in the debate are also interested in examining how the idea of moral agency plays out in the dynamics of free will. Some thinkers assert that moral agency is an absolutely crucial factor in the understanding of free will and human decision-making. Many thinkers appear to agree that consciously made decisions that are significant in that they carry some form of consequence to the individual are a basic type of decision that is indicative of one

[42] Ibid., 242.

exerting one's free will. Thus, an examination of the types of decisions in experiments and whether or not they are representative of one's free will is a crucial component to the conversation.

Philosopher Tim O'Connor is another strong voice trying to answer the question of free will and he discussed his interpretation of the Libet experiment at depth in an interview he had with a member of Biola University. In his interview, he discussed three important factors of the Libet experiment and its results. The first thing he thought was critical to recognize was that "the behavior that you're going to perform is something you have already decided before the experiment is run."[43] This behavior, he points out, is "atypical" and "unusual" in that when one goes about one's daily life, one usually makes decisions that are unplanned, or on the spot.[44] As far as the Libet experiment is concerned, it is important to recognize that the participants were told in advance that they were going to flick their wrist and move their hand. In the Libet experiment, the participants were told to spontaneously choose a moment in which to move their hand. However, the participant was aware that she would make the decision to move her hand, which may not allow her to truly act spontaneously in the experiment. It is plausible to consider that this anticipation could alter the data and experimental results in such a way that they were indicative of *planned* decisions and actions in a very short amount of time. If this were the case then the results might not be representative of decisions that are generally made throughout one's life.

The second factor that O'Connor thinks is important to recognize about the Libet experiment is that the participant was asked to pay attention to her actions, which once again is

[43] Tim O'Connor, "Tim O'Connor on the Libet Experiment," *Biola University Center for Christian Thought*, Published July 22, 2013, https://ochuk.wordpress.com/2013/07/22/tim-oconnor-on-the-libet-experiment/.

[44] Ibid.

not typical of day-to-day life. He asserts that this results in the participant taking "an observer role upon myself [herself]" when in reality the participant's attention would be directed outward towards the world rather than inward towards oneself.[45] Here are two unnatural results of the parameters set for the Libet experiment, therefore it is not unreasonable to think that the participants reacted to this in an unnatural way. The recorded activity in the brain and the feedback from the participants may not be truly indicative of real world decision-making or the way in which people intend and carry out the majority of their actions. This is significant because the types of decisions that are normally associated with one exercising one's free will is not necessarily the type of decision to act that was made in the Libet experiment.[46]

The third element of the Libet experiment that O'Connor brought up in the interview was that the brain activity recorded, especially the "readiness potential," is not specifically directed at the behavior… about to be performed."[47] He acknowledges that the readiness potential occurs in many other experiments involving situations that do not produce an action and that the presence of a readiness potential merely indicates that "there's a lot of activity going on in our brain."[48]

Thus, O'Connor advises that those who examine the Libet experiment remain critical at the interpretation of things that are not fully understood. He assumes that the recorded neural activity is a preparation that the brain makes in anticipation of the "impending decision," which he claims is "normal" for these types of situations and the human reaction to making these types of decisions.[49] Much of neural activity and brain function are a mystery to scientists and

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[45] Ibid.

[46] Ibid.

[47] Ibid.

[48] Ibid.

[49] Ibid.

philosophers alike, thus it is imperative that one does not take an interpretation of neural activity at face value. The questions of what other situations cause the brain to response to in the same manner and whether or not recorded electrical signals can be thought of as indicating one specific thing are imperative to constructing a sound philosophical framework on free will.

Eddy Nahmias is another influential thinker in the contemporary Free Will debate, and he is one of the philosophers who questions the eagerness of hard determinists, such as Sam Harris, who dismiss free will as an illusion. An important component of the Libet experiment that Nahmias chooses to focus on is the significance of the unconscious initiation of an action.

> Brain activity cannot, in general, *settle* our choices four seconds before we act, because we can react to changes in our situation in less time than that. If we could not, we would all have died in car crashes by now! Unconscious neural activity, however, can prepare us to take an action by cuing us to consciously monitor our actions to let us adjust our behavior as it occurs.[50]

Nahmias brings up a crucial point in the Free Will debate - neural processes that occur before we make conscious decisions could very easily facilitate in the preparation of the brain for the conscious decisions that will be made and executed by the body. In his essay "Why We Have Free Will," Nahmias reminds his audience that the nature of the unconsciousness still remains a mystery and that the role of the role of unconsciousness could be one that enables conscious free will. Thus, one important question identified by Eddy Nahmias deals with the nature of the relationship between consciousness, unconsciousness and the accuracy of the common understanding of this relationship.

In the Free Will debate, it is generally understood that free will is akin to a human quality that allows for the intention, making, and executing of conscious, significant actions. "Doubts

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[50] Eddy Nahmias, "Why We Have Free Will," *Scientific American* 312, no. 1 (2015): 78. http://eddynahmias.com/wp-content/uploads/2015/01/Nahmias-Free-Will-in-Scientific-American-2015.pdf.

[that humans have free will] exist because of the sophisticated experiments in recent decades that have shown that the brain initiates at least some actions before we become consciously aware that a decision has been made."[51] The presence of neural activity before conscious decisions and actions are made and carried out does not necessarily disprove that humans are free, according to Nahmias. He is one of the thinkers who argues that the mind and the physical brain should not be considered as separate entities (as they are in dualistic approaches) but that as society understands more of how the brain and the neural processes involved work, that the idea of free will will not vanish but will instead be modified.[52]

An extremely important theme that emerges from this multifaceted discourse is that of the layman's idea of free will. What the average person understands free will to be matters to many thinkers in the debate, and that premise does not seem to be openly questioned in much of the current literature. Perhaps this is the result of a sort of phenomenological stance in which the thinkers recognize that human intuition and human experience reveals some form of truth and contains a basic validity worthy of consideration in the construction of theories and the analysis of neuroscientific experiments. When one carefully examines the way emotions come about, and the way they are felt, and the carrying out of the subsequent actions, then perhaps some fundamental truth can be uncovered. That mixed with neuroscientific knowledge may crack the puzzle regarding human free will.

[51] Ibid.

[52] Ibid., 79.

The Soon et al Experiment

Many great thinkers such as Daniel Dennett, Eddy Nahmias, and Alfred Mele consider the Soon et al experiment as a significant milestone in the Free Will debate. Some of these thinkers claim that the experiment can help reveal the nature of free will while others believe that the way in which the experiment was carried out as well as the results of the experiment can only lead to the construction of more exact questions and careful experiments. In a talk he gave at the Santa Fe Institute, Daniel Dennett briefly explains the Soon et al experiment (2008) and uses the

experiment to help answer the questions, which were consequently the title of his talk, "Is Free Will an Illusion? What Can Cognitive Science Tell Us?"[53]

The first major component that Dennett draws out from the experiment is that the use of an fMRI machine allowed for the experimenters create certain algorithms and analyze certain neural patterns to the point where Soon et al claimed they could predict human behavior. According to the results of the Soon et al experiment, and as stated by Daniel Dennett, they were able "to 'predict' some decisions [made by the participants] ten seconds in advance."[54] He explained in his talk that the reason he placed the term "predict" in quotes was because the prediction of whether the participant would press the left or right button was not calculated in real time. Rather, the predictions were a result of "slow number crunching" and data analysis that in reality takes more than ten minutes, but if the analysis were to happen much faster, would eventually lead to predictions that could happen up to ten seconds before the participant is consciously aware that she has made the decision.[55] The purpose of touching upon this aspect of the experiment was to illustrate that it is certainly possible that someday science and technology will work fast enough to allow humans to predict behavior much faster than humans can become consciously aware of their decision to act.

The second important point that Dennett focuses on with regards to the Soon et al experiment is how it does not meet criteria that the average person would expect to be necessary for a definition of "absolute" free will without hindering a "practical" free will.[56] He begins by

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[53] Daniel Dennett, *Is Free Will an Illusion? What Can Cognitive Science Tell Us?* YouTube Video, Santa Fe Institute, May 17, 2014, https://www.youtube.com/watch?v=wGPIzSe5cAU.

[54] Ibid.

[55] Ibid.

[56] Ibid.

discussing how humans desire to be unpredictable, when in reality games such as pocket and rock, paper, scissors reveal that humans are not good at being completely random. Once a person has made a decision, there are usually certain tells that give aware that person's poker face. He goes on to state that the reason that people find it so important that they can be unpredictable is that being unpredictable means that one can "avoid manipulation by other agents."[57] Dennett agrees that an important component of free will is the ability to make decisions that are not under the manipulation of other agents, but he claims that the desire to be completely unpredictable, and thus completely free of manipulation of other agents, falls into an absolutism that is difficult to achieve in reality. Thus, it is important to note that Soon et al's experiment does not threaten free will, it merely demonstrates that humans are not completely unpredictable.[58]

Eddy Nahmias, like Daniel Dennett, does not believe that the Soon et al experiment destroys the possibility of a free will. He begins his article "It's OK if 'my brain made me do it': People's intuitions about free will and neuroscientific prediction" with addressing the idea that hard determinists such as Sam Harris often criticize compatibilists such as Daniel Dennett and "dismiss these [compatibilist] accounts of free will as radical revisions to the ordinary understanding of free will."[59] In other words, many hard determinists believe that compatibilists are taking the easy way out and changing their definition of free will to fit in with neuroscientific evidence, despite the fact that the result is something that is unrecognizable to the average person as a viable form of free will.

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[57] Ibid.

[58] Ibid.

[59] Eddy Nahmias, Jason Shepard, and Shane Reuter, "It's OK If 'My Brain Made Me Do It': People's Intuitions About Free Will and Neuroscientific Prediction," *Cognition* 133, no. 2 (2014): 503.

More specifically, Nahmias claims that many hard determinists believe that the average person holds the following to be true – in order to have free will, human behavior cannot be predicted with perfect accuracy. He states:

> Following Nahmias (2009), we will call those scientists who think free will is an illusion "willusionists." When willusionists challenge free will, they do so by explicitly claiming that we lack free will as it is understood by laypersons, that free will as it is ordinarily understood is incompatible with the naturalistic assumptions and the experimental evidence of the modern mind sciences… in every case, the willusionists refer to evidence demonstrating that information about brain activity can be used to predict behavior before people area aware of having made a decision (e.g. Bode et al.., 2011; Libet, 1999; Soon, Brass, Heinze, & Haynes, 2008; Soon, He, Bode, & Haynes, 2013), and they use these findings as evidence of a naturalistic worldview that allegedly challenges our ordinary beliefs about free will.[60]

Hard determinists work under the assumption that people are not naturally inclined to think of free will as something they can have when their behavior can be predicted. If someone can tell me what I am about to do before I am consciously aware of having made the decision to act in that way, then I do not have free will because this does not align with my innate understanding of free will. However, Nahmias wondered if people really understood free will to mean that their behavior could never be predicted. From what he understood, most people were under the impression that their actions were connected to neural activity and that certain scientists extensively study neural activity. Many scientific findings that have been released to the public in the recent past have suggested that certain parts of the brain's neural network have been linked to specific emotions, actions, and reactions. Many of the people who believe this wake up in the morning with the fundamental understanding that they are free and that their actions matter. Perhaps it isn't hard for the modern man to believe that free will could be incorporated in a complete neuroscientific understanding, and perhaps, even predictive ability.[61]

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[60] Ibid.

[61] Ibid., 504.

Nahmias decided to test what the average person truly understood about free will by conducting an experiment involving the participants to consider a series of futuristic scenarios. In all three scenarios, it was made clear that the actions and decisions made by people in the future could be predicted with complete and total accuracy. In the first scenario, a girl named Jill became the subject of a neuroscientific experiment in which she wore a machine that mapped out her neural activity. The scientists had her wear it for a month and within this month they were able to understand her decision-making process so well that they could perfectly predict her behavior, regardless of nature (i.e. moral, short-term, long-term, etc.) in real time and could even sense when Jill was trying to trick the scientists. These scientists were even able to manipulate a few of her behaviors, without her knowing it, while she was wearing this machine.[62] The conclusion of this scenario was stated as "human mental activity is entirely based on brain activity."[63]

In the second scenario, everything was kept identical except the conclusion of the scenario. In order to heighten the stakes of what prediction of neural activity and decision-making implies, the clause of the first scenario stating "'mental activity was entirely based on brain activity' was replaced with 'all human mental activity just is brain activity' and language was added explicitly stating that earlier brain activity causes a person's decisions."[64] In this scenario, Nahmias is testing whether or not the reduction of one's decision to neural activity threatens one's understanding of free will.

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[62] An example is that "they manipulate Jill's decision about whom to vote for Governor but not her decision for President." Ibid., 505.

[63] Ibid.

[64] Ibid., 507.

In the last scenario the neuroscientists and technology that were monitoring Jill in the hypothetical scenario were referred to as "mind readers." The last clause was also altered to read "Indeed, this experiment confirms that all human mental activity just is activity in the mind and soul such that everything that any human thinks or does could be predicted ahead of time based on earlier activity in their mind and soul."[65] This was an approach that was based in a dualistic philosophy, in which the physical body and a metaphysical "soul" work in conjunction to produce human behavior.

Ultimately, Nahmias concluded fro the data that the participants who considered these three hypothetical future scenarios were not at all discouraged from the idea of "perfect prediction."[66] The results were fairly similar across the three scenarios, whether it was implied that human behavior was the result of neural activity, as implied in scenarios 1 and 2, or metaphysical factors, as implied in scenario3 (i.e. the soul, a dualistic approach to the human person, etc.). Thus Nahmias concluded:

> We believe that the best explanation for this result is that most people do not assume that mental states (including conscious ones) must be metaphysically distinct from neural states, and because most people are not interpreting mental states to be bypassed in the neuro-prediction scenarios, they also attribute free will and responsibility to agents in these scenarios. It appears that the vast majority of people interpret the possibility described in the physicalist scenarios- that information about brain activity is sufficient to predict mental states, decisions, and actions- as compatible with the idea that mental states causally contribute to decisions and actions.[67]

If the idea that one's behavior is completely mapped by neural activity or that one's behavior can be predicted in real time before one is consciously aware of having made a decision to act does

[65] Ibid., 510.

[66] Ibid., 512.

[67] Ibid., 505.

not conflict with the average person's understanding of what free will is, then there is no reason for the Soon experiment to discourage a compatibilist view of free will from thriving or a viable definition of free will from being defended.[68] Furthermore, the Soon experiment can be used to further explore the nature of free will, a *real* free will that the average person is naturally inclined to accept.

Alfred Mele is another voice in the debate who speaks on the Soon et al experiment. Mele is rather skeptical about taking the results and implication of the Soon experiment for granted. The first thing that Mele does when thinking about the Soon et al experiment is pinpoint what the experiment addresses exactly in its set-up and procedure. "What are the scientists measuring or detecting several seconds before a button press? What is that neural activity associated with? My bet is a slight unconscious bias toward a particular button on the next press. Possibly, the bias gives the participant about a 60% chance of pressing the button next."[69]

After thinking about it a bit more, Mele understood that the core of the experimental procedure lay upon the fact that the participants have no incentive to pick one button, left or right, over the other. There was no reward or punishment dependent on their behavior therefore what the participant chose was completely arbitrary. He explains:

> These participants are like the shoppers in my peanuts example. The shopper doesn't care about getting a particular jar, as long as it's a sixteen-ounce jar of Planter's Peanuts. They're also like the participants in the Libet experiment- except that they're picking a button to press for no particular reason. Maybe this kind of picking doesn't have much to do with free will. But even if it does, it would be difficult to generalize from findings in this sphere to claims about what

[68] It is worth noting that Nahmias admitted that there is the possibility that the results were skewed. "The most significant response to our experiments is that many participants may be failing to understand or internalize relevant information from the scenarios. Perhaps people are so emotionally attached to having free will that they have a 'free will no matter what' view and will refuse to say that some seemingly coherent scenario would take it away." Ibid., 512.

[69] In his use of the term "bias," Mele means something along the lines of a personal preference. Alfred Mele, *Free* (New York: Oxford University Press, 2014), 28.

> happens when people have to make hard choices and are consciously reasoning about what to do.[70]

The types of decisions that the participants are making, as well as the conditions for the decision-making to happen are scrutinized by Mele. As he understands it, the inclinations felt by the participants do not "dictate or compel behavior" in the participants, but instead act as "nudges."[71] The focus of the experiment may very well have ended up being a measurement of personal preferences as oppose to the ability for people to freely make decisions. What seems to be the question at hand is what free will has to do with these particular circumstances and conditions. Mele seems to be suggesting that the Soon et al experiment may not be as related to free will as other members of the debate seem to think.

Mele brings forth two points as to why Soon et al and similar experiments do not threaten free will. The first is that no experiment has achieved 100% accuracy yet, which may be the results of predominantly measuring for preference and inclinations. If this is true then it is doubtful that any experiment designed in a similar fashion to the Soon et al experiment would ever reach total accuracy. The second factor that Mele is skeptical about is that *if* it were the case that the actions of the participants were determined unconsciously, then it still seems that the participants have the power to determine whether or not they follow through with those actions. The participants may have been unconsciously swayed to press a certain button at a certain time, but if that were the case, then they could have easily broken from that decision. In other words, they can negate any action that may be "determined by unconscious brain activity."[72]

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[70] Ibid., 29.
[71] Ibid., 30.

[72] Ibid., 32.

An important implication of the Soon et al experiment was the idea that the actions performed were predominantly determined by the unconsciousness. The idea that these actions were controlled or initiated unconsciously did not come as a surprise to Mele. The experiment did not allow the participants time to consciously reflect on their decision to push the button.[73] He purpose of the experiment was to not consciously decide when to press the button. How can the experimenter expect the participants to recall having made the conscious decision to press the button? How could the participant possibly attribute their action to their consciousness if she believed that she was following the directions given to her in the beginning of the experiment? Thus, the participant's input as to her experience of becoming aware of her decision to press left or right may not be reliable as to determining whether the decision to act stemmed from the consciousness or unconsciousness.

Adina Roskies is another influential voice in the Free Will debate and she has brought up concerns regarding the complexity of both the philosophical and physical particularities of the Soon et al experiment. She views the Soon experiment in terms of the decision being made by participants as well as the neuroscientific analysis of the data. She states:

> In a recent event-related study probing the timing of motor intentions, Haynes and colleagues used pattern classification techniques on fMRI data from regions of the frontopolar and parietal cortex to predict a motor decision. Surprisingly, information that aided predication was available 7-10 seconds before the decision was consciously made, although prediction success prior to awareness was only slightly better than chance (~60%) (Soon et al. 2008). This study demonstrates that prior brain states, presumably unconscious, can influence or bias decision-making. While neural precursors to decision and action and physical influences on behavior are to expected from cognitive systems that are physically embodied, it is startling that any brain information could provide much guidance to future arbitrary decision so long before they are made. The weak predictive success of this study does not undermine our notion of volition or

[73] Ibid., 43.

> freedom, but it nonetheless raises important challenged to ordinary views about choice.[74]

This experiment deals with short-term, immediate, arbitrary decision with no emotional or moral value. The first question that Roskies' comments bring to light is how these kinds of questions can give meaningful insight into how the decision-making process that people go through in their lifetime in their variety and physio-emotional complexity. How does the decision of whether or not I should press the left or right button relate to decisions I make about the future, such as the decision to eventually live in an other country, or the decision to one day have a family?[75]

The second point that Roskies brings up with regards to the Soon experiment is the way in which the data from the fMRI machine was utilized. According to Roskies, not a lot of research has been done on what parts of the brain correspond to intention. She believes is a critical factor for understanding the nature of free will, especially with regards to decision made that produce action.[76] In other words, intention and free will seem to be linked at a fundamental level, and the understanding of one may lead to a fuller understanding of the other. Intention and volition are both "abstract concepts" that need much more attention in the world of neuroscience. They seem to operate in a complex manner, so it would be reasonable to assume that the neural activity partnered with intention and volition are not simple and require much attention and experimentation in order to achieve a complete understanding of their neurological manifestations.

They also seem to be connected to many parts of the brain and have any layers that correspond to the nuances of its nature (i.e. intention to act in the near future, intention to always

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[74] Adina L. Roskies, "How Does Neuroscience Affect Our Conception of Volition?" *Annual Review of Neuroscience* 33, no. 1 (2010): 116, accessed October 14, 2015, http://isites.harvard.edu/fs/docs/icb.topic889975.files/.

[75] Ibid.

[76] Ibid.

act morally, intention to act in the future, etc.). In that case it seems that one cannot look at the Soon et al experiment and assign responsibility to the consciousness or the unconsciousness for any part of the participant's actions. "Although in certain contexts neural mechanisms of selection and motor intention may be unconsciously activated, once one takes into account the variety of levels at which intentions operate (Mele 2009, Pacherie 2006, Roskies 2010), none of the current data undermines the basic notion of free will."[77] Overall, Roskies seems to be calling for a careful dissection and decanting of neuroscientific experiments and the exploration of intentionality in order to further understand the nature of free will.

A few major themes and points of serious contention from this portion of the Free Will debate are manipulation, the types of decisions made in the Soon et al experiment, and the "ordinary" understanding of free will. A few of the thinkers in this snippet of the Free Will debate question whether or not the parameters of the Soon experiment influenced the participants such that their behavior was manipulated and the data gathered would not be entirely useful in determining the nature of free will. For example, the experimental procedure has the participants act in a manner in which they were asked to be spontaneous, yet they could not be completely spontaneous since they had to anticipate the making of a decision to act. This anticipation may be an important piece of information with regards to the nature of the readiness potential that is recorded in these types of experiments. It may also be an important factor in discovering how the type of decision made in this experiment relates to other types of decisions made by people throughout their lifetime.

A few thinkers are eager to point out that the types of immediate, short-term decisions made in the experiment are not representative of all of the different types of decisions one makes throughout one's lifetime. The participants in the Soon et al experiment were asked to act

[77] Ibid., 117.

without consciously planning to act or to consciously make a decision to act. This parameter led to the observation of a very specific type of action and neural manifestation of action. People make all sorts of decisions some of which are intended to come to fruition immediately and some of which may be a plan for a future course of action. Some may have moral or legal importance while others may depend on personal preference. The variety of types of decisions that one can make leads to the idea that perhaps decisions are much more complex than the Soon or Libet experiments perhaps lead people to believe. Ultimately, there seems to be a demand for the examination of how different types of decisions each neutrally manifest and translate to action.

The last significant implication of this portion of the debate is the question of what the average person's understanding of free will actually looks like. How does the average person picture and envision free will to be? What are some of the "cardinal rules" with regards to human free will that must be upheld for it to remain intact? As suggested by Eddy Nahmias, some thinkers in the debate may be seriously mistaken in their assumptions of what the average person considers to be free will. This is a crucial point because the frameworks of many thinkers relies on the upholding or breaking down of the layman's version of free will. It seems that the debate would benefit from a reconsideration of what is universally accepted as human free will and what its fundamental, core ideas are.

The Wegner et al Experiment

Daniel Wegner is a well-known hard determinist who has concluded that the results of his experiments, and those of his predecessors, provide strong evidence that free will is nothing more than an illusion. According to Wegner, our minds trick us into believing that we have more agency than we actually do. Our mind takes the events occurring around us, and draws connections between those and our feelings of autonomy – our feelings of exercising a conscious will. It is well understood that the human mind is liable to deception and that humans can be deceived. Participants experienced possessing control over someone else's arms in the Wenger et al experiment, and later experiments performed by Wegner provide evidence to suggest that people can be tricked into believing that a set of arms that are not there are their own, and move in accordance to their conscious will.[78]

A closer examination of Wegner's view illuminates his distinction between what he considers to be "conscious will" and what he considers to be "free will." It seems that "conscious will" refers to the self-recognition of an action as one's own. In other words, a person is exerting her conscious will when she is aware of creating an intention to act and feels as if the action she is associating with her conscious decision corresponds to the resulting action. What if the actions that one believes to be a result of one's conscious will, however, were caused by something entirely different? Wegner explains:

> We often consciously will our own actions. This experience is so profound that it tempts us to believe that our actions are caused by consciousness. It could also be a trick, however – the mind's way of estimating its own apparent authorship by drawing causal inferences about relationships between thoughts and actions. Cognitive, social, and neuropsychological studies of apparent mental causation suggest that experiences of conscious will frequently depart from actual causal processes and so might not reflect direct perceptions of conscious thought causing action.[79]

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[78] Daniel M Wegner, "The Mind's Best Trick: How We Experience Conscious Will," *Trends in Cognitive Sciences* 7, no. 2 (2003): 65.

[79] Ibid.

As demonstrated in Wegner's "helper hands" experiment, people can attribute responsibility and agency to something that is in fact not in their control. Scientific experiments like this one demonstrate that the human mind is prone to deception and that people are willing to accept actions caused by outside forces as their own. How often does this occur though? Could it be that this trick of the mind occurs much more often than people realize? What if the majority of the actions one attributes to one's own will and agency are actually caused by outside factors, and one's mind makes the mistake of claiming it as a result of one's conscious will? After grappling with these questions, Wegner concludes that free will is an illusion.

Wegner does not immediately make the assertion that a person's conscious will does not lead to actions or are not the cause of following actions. He claims that people may have the ability to cause actions that they intend, but he remains adamant about the fact that actions and events in the world all have causes. They are all determined. He states:

> Does all this mean that conscious thought does not cause action? It does not men this at all. The task of determining the causal relations between conscious representations and actions is a matter of inspection through scientific inquiry, and reliable connections between conscious thought and action can potentially be discerned by this process [37]. The point made here is that the mind's own system for computing these relations provides the person with an experience of conscious will that is no more than a rough-and-ready guide to such causation, one that can be misled by any number of circumstances that render invalid references… The experience of conscious will is a marvelous trick of the mind, one that yields useful intuitions about our authorship – but it is not the foundation for an explanatory system that stands outside the paths of deterministic causation.[80]

One's brain can be a source that determines actions, but it is not the coveted free will that libertarians and compatibilists hope to defend. It is possible that conscious will causes actions in

[80] Ibid., 68.

certain circumstances, but Wegner is doubtful that it is to a significant extent. This must be explored, however, with the help of neuroscientific experiments and careful scrutiny in order to validate Wegner's theory. Something that Wegner can assert with clear confidence is that "the brain creates both the thought and the action, leaving the person to infer that the thought is causing the action."[81] Ultimately, Wegner does believe that events in the world and human actions are determined, and that free will as understood by the layperson is indeed an illusion.

Daniel Dennett published a review of Wegner's book *The Illusion of Conscious Will*, in which he refutes Wegner's notion of an "illusory conscious will."[82] First, Dennett establishes that Wegner has a particular characterization of the human person, the Self. According to Wegner's philosophical framework, the actions correlating to and potentially caused by conscious will are distinct from actions that are caused by unconscious neural activity. In this way, Wegner defines the Self as only being in control or being able to exert her will when she is aware or conscious. Dennett goes on to claim:

> [Wegner] identif[ies] the Self that emerges in his and others' experiments as a sort of public-relations agent, a spokesperson instead of a boss, but these are extreme cases set up to isolate factors that are normally integrated, and we need not identify *ourselves* so closely with such a temporarily isolated self.[83]

Essentially, Dennett identifies that Wegner has created a sort of divide. The conscious activity of a person largely constitutes that Self, and the conscious will allows one to be "morally responsible" for one's actions that one has intended.[84] The unconscious activity, however, is

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[81] Ibid., 66.

[82] Daniel Dennett, *"Making Ourselves at Home in Our Machines: A Book Review,"* Accessed November 3, 2015, https://ase.tufts.edu/cogstud/dennett/papers/wagnerreview.htm.

[83] Ibid.

[84] Ibid.

separate for this. Thus, one appears not to be completely in control of one's actions since unconscious activity does not align with what constitutes a responsible Self.

Daniel Dennett does not agree with Wegner's characterization of the Self, and thus makes his case against the hard determinist's stance:

> For Dennett, the self is best understood as an entity that is spread across the brain – both in time and space – and includes both conscious and unconscious processes within the brain that are responsible for causing behavior. With this broadened conception of the self in tow, Dennett believes he can eliminate the threat to free will posed by Libet's experiments. Since this extended sense of self includes the unconscious brain activity that preceded subjects' awareness of making a decision, it is no longer proper to view this unconscious activity as being a foreign cause of one's behavior. This is to say that free will no longer requires that decisions corresponding to time t have a causal influence over what we do. Under Dennett's expanded understanding of the self, the unconscious brain activity that initiates our actions are as much a part of the self as any decisions of which we are consciously aware.[85]

Dennett chooses to include unconscious activity in his characterization of the Self, which allows for one to be responsible for the actions that one does not consciously intend. These actions, as well as the unconscious neural activity, are an integral part of the Self. The person is the cause of her actions, even if she is not aware of having intended them. Therefore, she is also the cause of her actions even if they are not the result of her conscious will. Dennett's defense of a free will in this case revolves around a radical re-thinking of Wegner's self.

Alfred Mele takes a different approach in defending the idea of free will against Wegner's deterministic account. The method that Mele uses in order to understand Wegner's stance against the idea of free will is a careful list of the core ideas of Wegner's philosophical framework. They are as follows:

1. Some human actions aren't caused even partly by conscious intentions (and the same goes for the neural correlates of conscious intentions; some actions aren't caused by them either.

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[85] Stephen G Morris, "The Impact of Neuroscience on the Free Will Debate," *Florida Philosophical Review* 9, no. 2 (2009): 67, Accessed November 10, 2015, http://philosophy.cah.ucf.edu/fpr/files/9_2/morris.pdf.

2. All human actions are caused in basically the same way.
3. So no human actions are caused even partly by conscious intentions (and the same goes for the neural correlates of conscious intuitions). (from 1 and 2).
4. People don't have free will unless their conscious intentions (or their neural correlates) are sometimes among the causes of corresponding actions.
5. So people don't have free will. (from 3 and 4).[86]

There are two points in the five-point scheme that Mele does not agree with in particular. The first point of contention is the one that states all actions have to be caused in the same way (2). Mele does not quite understand why that is a fundamental idea in Wegner's framework, and argues that it is an unreasonable condition to have. He goes on to claim that an unconscious decision to do something as trivial as move a part of his body is not at all similar to his decision to leave a hotel room as a certain time and meet with people alter that evening.[87]

The second argument Mele makes is against the fourth point of Wegner's argument. Mele insists that there is sufficient evidence to suggest that "conscious intentions are sometimes effective… and that they lead to intended actions."[88] The specific example that Mele cites earlier in his book is the example of a study that was done on women who were asked to consciously plan to perform a routine self-check breast examination on themselves on a certain date. Some of the women followed through with their conscious intention at said later date while less than half did not.[89] Mele criticizes Wegner's use of experiments and other neuroscientific evidence to back up the same kinds of general interpretations that were made of the Libet et al experiment and he

[86] Alfred Mele, *Free* (New York: Oxford University Press, 2014), 50.

[87] Ibid.

[88] Ibid.

[89] Ibid., 47.

asserts that with his careful, detailed, methodical analysis of the nature of human decision-making, "Wegner's threat to free will disappears."[90]

This portion of the Free Will debate illuminates a few legitimate points of concern. The first idea that should be discussed is the role of intention, conscious or otherwise, in the human decision-making process. Another idea of interest is that of the notion that a person is responsible for some of her decisions, and not for others.[91] With regards to conscious and unconscious intentions, it seems to be a common suggestion among a few of the thinkers in the debate that more experimentation and careful analysis should be done to appreciate and better understand the complexity of human intentionality. Seeing how intentionality manifests, and whether or not it can take place consciously and unconsciously may shed some light on what decisions may be important to consider in terms of a viable version of human free will. This may also lead to a discussion of what limitations and factors should go into the common understanding of what free will is.

The question of what decision the human person can or cannot be held responsible for also seems in part to be connected to a better understanding of the human decision-making process. It seems that in order for thinkers to determine if and how people can be held responsible for actions having resulted from unconscious intentions, it is imperative that more experimentation be done. In order to address dealing with actions people have mistaken as theirs, it appears that the question that needs to be addressed is: To what extent are human beings deceived in what actions manifest from their conscious or unconscious intentions? The severity

[90] Ibid., 51.

[91] Here the term "responsible" is used in such a way that the person is the cause of the decision and resulting action. They are not merely the products of pre-determined events.

of the answer to this question, or the severity of what neuroscientific evidence suggests this answer to be may serve as a guide to how the investigation of this issue should proceed.

Chapter 3: Listening to Neuroscientific Data

Neuroscience and Philosophical "Free Will" Theories

The three traditional stances taken by philosophers in the contemporary Free Will debate - Hard Determinism, Compatibilism, and Libertarianism – are frameworks that have developed as if based on the understanding that free will is a quality that humans might possess. Many of the philosophical stances taken and much of the literature on this topic is phrased in such a way that there seems to be an underlying defense or denying of a human possession of an entity referred to as "free will." In other words, it seems that the essence of much of the debate revolves around the idea that human beings either have or do not have free will.[92] This chapter will illustrate that neuroscientific evidence from the experiments discussed in the previous two chapters suggest that free will is a human quality much more complex than what the traditional arguments presuppose.

Free will might be better understood as a capacity humans have as oppose to a quality they might possess. First, an analysis of the Libet et al experiment will bring to light the importance of carefully planning, thinking through, and executing a neuroscientific experiment of philosophical value. Then, a closer look at the Soon et al experiment will allow the expansion of Roskies' point about the neural complexity of intention into the nature of free will. Next, examination of the results and nature of the Wegner et al experiment will suggest that the Free Will debate may profit from a radical reworking of the general understanding of the nature of free will. Ultimately, these experiments seem to indicate that the power one has over making

[92] In the case of Compatibilism, it may be argued that one may possess varying degrees of free will depending on one's situation i.e. there are situations in life that restrict one's free will and there are situations in which one's free will has significant power.

important decisions in one's life does exist, although perhaps it manifests in each situation to a degree dependent on biochemical processes as well as external forces at play.

Another focus of this chapter will be to discuss how the current "hot topic" neuroscientific experiments provide valuable insight into how the debate should proceed in the near future. These experiments have each provided a critical perspective into looking at the question of the nature of human free will but they have also revealed certain pitfalls in neuroscientific experiments that should be avoided in experiments that will be vital to the future of the debate. Discussions and articles draw their strength and legitimacy from the experiments they analyze, thus it follows that the experiments chosen as focal points of the debate must be held to a set of standards and critical evaluation. The qualities of these potentially successful and insightful future experiments will be discussed and a proposal for one of these hypothetical future experiments will be put forth in this chapter.

Throughout the examination of these experiments, insightful comments made by thinkers such as Timothy O'Connor and Adina Roskies will serve as inspiration for suggestions on how the Free Will debate should proceed. More specifically, concerns that each thinker had with popular neuroscientific experiments in the debate as well as their observations in regard to the interpretation of the neuroscientific data will be the focal points of this chapter. Timothy O'Connor's perspective with regards to the Libet experiment are crucial to a rethinking of the role and development of neuroscientific experiments in the debate. The works of Adina Roskies contain details that allow one to reimagine what free will could mean to the thinkers of the debate, as well as the new approach that those thinkers would take to explore the various components of a human free will. All of this leads to a new form of compatibilism in which free will could potentially be seen as something that lives, so to speak, bound by conditions and rooted in many aspects of the human mind.

The Libet et al Experiment

Timothy O'Connor hinted at the importance of meticulous planning and executing of neuroscientific experiments in the Free Will debate in his discussion on the Libet et al experiment. If a debate is to heavily draw on experiments and experimental data, then it makes sense that the focal experiments in each paradigm of the debate must be smartly chosen. His analysis of Libet's experiment was absolutely brilliant in that he was able to analyze the experiment based on its intended purpose, experimental parameters, and the participant's experience. The first important point he made was that the Libet et al experiment was not designed with the intention of being of relevant to the idea of free will. The experiment intended to examine short-term, anticipated yet spontaneous decisions.[93] Not only are these not the kinds of decisions that one tends to make on a daily basis, but they are also not the kinds of decisions typically associated with the topic of free will. A critical mind may associate ethical or otherwise important choices, pressing short-term decisions or long-term intentions as being more suitable for the study of the nature of free will. If free will is a quality that allows one to make significant decisions, then it would follow that the best types of decisions to study and design experiments would be significant or impactful decisions.[94]

Thus, the first point of scrutiny when examining the Libet experiment is the type of human decision the experiment tests for. It seems that many thinkers in the debate would agree that the Libet experiment deals with spontaneous, potentially unconscious short-term decisions.

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[93] Tim O'Connor, "Tim O'Connor on the Libet Experiment," *Biola University Center for Christian Thought*, Published July 22, 2013, https://ochuk.wordpress.com/2013/07/22/tim-oconnor-on-the-libet-experiment/.

[94] Here the term significant decision refers to a decision that one makes that has the potential to impact one's life. If one does not have the ability to make life-altering or somewhat significant decisions (in other words, if one could only make insignificant decisions), then it can be argued that one does not have free will.

Free will seems to be defined by many thinkers as a person having the ability to consciously make important decisions. The kind of decision-making process that appears to best describe the general understanding of free will would probably not be an in-the-moment decision to flick one's wrist. It is also worth noting that this decision had no significant consequences. The time the participant chose to make the decision to flick her wrist as well as the decision to flick her wrist at all were void of important repercussions.

The Libet experiment can serve as an important conversation partner to thinkers in the contemporary Free Will debate, and one of its most valuable attributes is that upon scrutiny it can help reveal the characteristics of experiments better suited for the focus of the current paradigm of the debate. Experiments designed to look at the proper kinds of human decisions are a step in a very useful direction. Much discussion dealing with the neuroscientific experiments in the Free Will debate is about the data resulting from neural activity as well as data that may support or undermine conscious/unconscious decision-making processes. The Libet experiment, as pointed out by O'Connor as well as Libet himself, was not intended to look at the nature of free will or conscious, significant human decisions. However, the experiment did yield interesting neural data and the piece of the experiment that rightfully caught the attention of many scholars was the buildup of neural activity, referred to as the "readiness potential," that appeared well before the participant communicated being aware of having made the decision to move her wrist.[95]

Therefore, another essential component brought forth through discussion of the Libet experiment is the participant's experience. In the creation and analysis of neuroscientific experiments, regardless of nature, it is imperative that the participant's experience is taken into

[95] Benjamin Libet, "Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action," *Behavioral and Brain Sciences* 8, no. 4 (1985): 533.

account. The mindset that the participant has when she enters and goes through the experiment will affect the way she thinks about and reacts to the parameters of the experiment. The Libet experiment is a perfect example of this. As O'Connor mentioned in his interview, the "readiness potential," which is a major point of contention in the Free Will debate, is seen in many other experiments in which the participant is *anticipating* the making of a decision.[96] Thus it is not unreasonable to acknowledge that the readiness potential may just be the neural buildup that results from the human mind preparing to make a decision or anticipating the initiation of an action.

The most crucial impact of this experiment's set-up lies in this readiness potential, as it may be data that distracts from more important points of the experiment. If the "readiness potential" is in fact the neural buildup resulting from this kind of anticipation, then it is extraneous data that can be prevented in future experiments through a change in experimental parameters and an understanding of the participant's experience. The removal of this "readiness potential" would leave the more pertinent neural data to be examined, analyzed, and interpreted by the thinkers of the debate. Designing future neuroscientific experiments that do not allow the participants to spend time anticipating the making of short-term decisions would also be worthy of the effort if in fact the "readiness potential" remains present in experiments testing factors of human free will in other types of human decision-making processes. At that point it would be understood that the "readiness potential" is not solely the participant's anticipation of making a short-term decision, therefore other possible explanations for this neural buildup could be uncovered. If this were the case, then it may very well end up being the case that the "readiness potential" is indeed a crucial factor in the Free Will debate, and its nature would be closer to

[96] Tim O'Connor, "Tim O'Connor on the Libet Experiment," *Biola University Center for Christian Thought*, Published July 22, 2013, https://ochuk.wordpress.com/2013/07/22/tim-oconnor-on-the-libet-experiment/.

being uncovered. The key to this, however, lies in the careful planning, carrying out and analysis of neuroscientific experiments.

The participant's anticipation of making a decision was an innate part of the Libet experiment. The reason that the neural buildup present prior to the participant communicating awareness of having made the decision to act was not originally associated with the participant's anticipation was that the participant's perspective was not heavily considered by the creators and critics of the experiment. O'Connor's analysis' brilliance come in part from the fact that it synthesizes different perspectives of the Libet experiment. It is also interesting that thinkers in the debate concern themselves with the layman's idea of free will but not necessarily the layman's experience of free will. The layman's experience of free will may be a key to the Free Will debate in that one's intuition on free will may lead to the ideal conditions for revealing the nature of free will. If an experiment were designed around forming an intention and carrying it out in accordance to what that participant would consider an act of free will, then the recorded neural activity, resulting data, as well as resulting participant experience might allow thinkers in the debate to get closer to understanding how free will operates and how it physically manifests.

Ultimately, it is important to carefully select what experiments become the focus of this crucial debate. Much of O'Connor's analysis brings into question whether or not the Libet experiment should currently be considered as a focal experiment to the debate. That is not to say that the experiment is not important and did not influence the course of the debate, but rather thinkers should question whether there is now much reason, after careful examination of the experiment's designs and results, to continue letting it influence free will thinkers in such a powerful way. To have this experiment become a central focal point in the debate, as well as a major talking point in many modern works on the topic of free will may not be the best way to push the conversation forward. If anything this experiment serves as a reminder that new

experiments with a more fitting design, testing for a kind of conscious or unconscious decision-making process that relates more to what is defined as human free will should become part of new foundations and new focal points in the future of this debate.

The Soon et al Experiment

The Soon et al experiment provides a basis for explaining the necessity of the neural mapping of complex physio-emotional links. As mentioned in the second chapter, Adina Roskies believed that the intention behind an action, and the nature of intentionality, was extraordinarily multi-dimensional.[97] What she meant by this was that intentionality was a metaphysical component that was probably rooted in many parts of the brain and involved in a wide range of human emotional and physical processes. In the Soon experiment, intentionality was not truly a point of discussion as far as the initial report and findings were concerned. However, if something as basic and integral to the human decision-making process as intention is not really understood in a neuroscientific sense, then the decisions carried out by intentions cannot be fully understood either.

The data collected from the fMRI scans gave readings on the electrical signals originating from different portions of the brain during the formation of the intention to act and the execution of the action. However, the interpretation of this neuroscientific data and evidence is not a precise science since the neuroscientific, as well as philosophical, natures of intentionality and free will are not well known. Therefore, Roskies rightfully asserts that the evidence collected from this experiment "does not undermine the idea of a free will" and cannot provide a definite conclusion as far as the nature of intention or free will is concerned.[98]

If Roskies is confident that intentions are not aspects of human behavior that can clearly be mapped out and understood in simple patterns, it is plausible to propose that the decisions that stem from these intentions, and that are derived from one's free will, are of a complex nature as

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[97] Adina L. Roskies, "How Does Neuroscience Affect Our Conception of Volition?" *Annual Review of Neuroscience* 33, no. 1 (2010): 116, accessed October 14, 2015, http://isites.harvard.edu/fs/docs/icb.topic889975.files/.

[98] Ibid.

well. Free will may stem from many complex portions of the brain and may manifest in a number of ways. If free will is treated as an ability (i.e. the ability to freely will and intend and consciously execute actions from actively willing) rather than a quality that humans either do or do not possess, then the data collected from neuroscientific experiments is not trapped as evidence that either proves or disproves that humans possess a free will. Rather, thinkers will have the liberty to look at the data and truly let the data influence their thinking.

It may prove extremely helpful to approach the results of neuroscientific experiments as indicators of something great and complex occurring within the human person. This would be an ideal mindset which would allow the research to drive the questions and course of the debate towards creative and unknown territory. Instead, what oftentimes happens now is that researchers are becoming trapped in a mindset in which thinkers are trying to have the data fit one theoretical framework or another. Adina Roskies made it clear that the results of the Soon experiment do not clearly prove or disprove that humans possess a free will. This idea can be taken as a stance on the nature of neuroscientific evidence and a form of opposition to the form of the current Free Will debate. Neuroscience may not act definitively to directly prove or disprove theories of free will, but what it can do is act marvelously well in providing significant information on the nature of elements of free will and intentionality.

If free will and intentionality are as nuanced and layered as Adina Roskies suggests, then the search for patterns and predictability in the Free Will debate will probably be in vain. No real progress will be able to be made because the most important pieces of information that the data will provide, which would be information with regards to the complexity of free will and intentionality, would be lost in the act of fitting the data into the categories of hard determinism, compatibilism, and libertarianism. The step that needs to be taken in order to understand the potential complexity behind these philosophical terms would be to find the linked attributes to

the activity of freely willing, as well as the conditions that are fulfilled when one believes that one is acting in accordance with one's free will, and observe them.

If the conditions for free will and intentionality were to be explored, then researchers would probably have to explore many parts of the brain and look at linked behaviors. A useful guide in order to begin designing effective neuroscientific experiments may be the layman's intuition. People naturally know when they feel that they are acting in accordance to their will and when they feel most "free." Looking at a sample of these scenarios and finding common elements may be a good place to start. The reenacting of these scenarios partnered with a careful account of one's experience in these scenarios may lead the way in figuring out the conditions under which free will operates. In those scenarios, similar parts of the brain may be used or similar themes and particular components may lead to a pattern that allows for further understanding of how free will behaves and under which circumstances it is most pronounced.

Ultimately the Soon et al experiment is a prime indicator of the complexity of the matter at hand. The results of this experiment, as well as many others, are difficult to interpret as evidence for or against the existence of a free will. However, this experiment is significant and does have the power to influence the course of the debate. Ultimately, listening to what the results of this experiment suggests can lead the debate to a completely new and eventful phase in which the core idea behind free will completely changes and becomes heavily rooted in phenomenological experience as well as neuroscientific evidence.

The Wegner et al Experiment

The Wegner et al experiment is the most recent experiment performed of the three that are examined in this work, and it is the one that successfully indicates that the nature of free will is intricate and manifold. After examining this experiment in correlation to other experiments dealing with the question of the nature of human free will, it is plausible to suggest that the current debate focuses on an understanding of free will that is relatively narrow. Many thinkers seem to base their philosophies on the notion that free will is an entity that people either do or do not possess. Either humans have free will or everything a person does is completely determined. However, a careful examination of the Wegner et al experiment supports the suggestion that free will is something more along the lines of an ability that people have that is either exacerbated in certain situations and stifled in others.

In the Wegner experiment, results suggested that participants attributed agency to external forces that were indeed not in their control. If one can believe that a set of arms that actually belong to someone else were hers, then what other kinds of things can this individual be mistaken about when it comes to what she can control? Does she actually attribute agency to forces outside of her control on a daily basis? In most moments of her life? Is her idea of self-control or of control in general just an illusion?

The girl who is participating in the experiment and the girl who acts as the "helper hands," or the visible set of arms, both intend to move their arms in the same way. The girl whose arms are bound cannot move due to the circumstances, but the "helper hands" move the way the girl would have intended her own arms to move. Essentially, the girl who wishes to exert her will ends up channeling that through an external force that correlates to her will. In reality, the girl is still willing her arms to move, and still has the ability to exert her free will. The only restriction is that her arms cannot move exactly the way she wants (in the experiment they

allowed some of the girls to move their arms slightly to imitate the actions given to them in the directions) and are out of her field of vision.[99] Circumstances are restricting her ability to exert her will over her body, but since the helper hands are mimicking what her arms can only minimally do, she seems to attribute agency to the helper hands.

It is important to note, however, that she *is* minimally moving her arms. She understands that her arms move as a result of her willing her arms to move. However, her sight is limited to viewing only the helper arms that are moving in the same way. As a result, she attributes her agency in a dualistic sense- one is what she feels, which is her arms that move as a result of her will, and the other is what she sees, which is the set of arms whose movements reflect her will. She recognizes that the action that corresponds to her will is hers. Her arms that minimally move still move as a result of her will. Circumstances were just such that her sight was limited to the helper arms and she began associating the actions of those arms with her will. This does not take away from the fact that her arms moved as a result of her freely willing them to do so. It does not matter however restricted her movements were or how her vision may have been restricted, she was still in control of her body and was able to consciously move her arms.

It is no secret that humans are susceptible to deception, especially when it comes to the sense of sight. False associations do not, however, mean that one cannot freely will or be able to exert one's free will such that it yields conscious, significant actions. The only instance in which this argument completely falls apart would be if the arms, legs, and other bodily entities that one associates as one's own are in actuality not their own. This would be a situation such as the one depicted in the movie *The Matrix*. The body I believe to be my own is in fact not my body at all. I am a floating brain in a jar full of liquid and my body is a delusion in my fantasy world that I

[99] The group of participants that moved their arms minimally while the helper hands fully executed the movement that was commanded had the highest scores as far as attributing agency or feeling that the helper hands were theirs. Thus, this is the group that will be focused on in this argument.

mentally live in and experience. Assuming that I am not this floating head and that I in fact have a body that is my own and can act as a result of my willing, then the Wegner experiment does not disprove that I have free will. It does, however, provide wonderful insight into some potential limitations and boundaries under which that free will operates.

Humans act in the midst of a slew of external and internal influences. External influences would be entities such as gravity, weather, natural limitations of the human body, etc. while internal influences may refer to preferences, biochemical imbalances, mental disorders, etc. There are also present in the world forces outside one's control, such as the helper hands in Wegner's experiment. If it is the case that one's body is moving in relation to one's will (at least, as much as it can under the circumstances), and an external entity correlates to one's will, then one may mistake the external entity to be under the influence of one's will. The interesting portion of this argument comes with what happens after. Some people under this circumstance may realize after a certain point in time that the external entity is in fact not behaving as a result of her will whereas others may continue believing that their will is causing the entity to move or act even *after* the motion of the entity no longer aligns with their will.

It would be at this point that one's free will is restricted because for a portion of time one would either continually will something that is not coming to fruition since agency is falsely being attributed to an external entity or one would believe that whatever actions being carried out by the external entity result from one's will. The idea that one can be fooled into believing that the actions that are carried out by something else that is entirely out of one's control are the result of one's actively willing it is fascinating because this process would involve a retroactive account of one experiencing one's willing. That is to say that one would have to observe the actions of the external entity, and after observing the motion of the external entity, justify the action as a result of one's will. This person would then be fabricating a false account of her will,

and allowing her understanding of her will be momentarily molded by the outside world. It would only be when she engages in actively willing something that is not then carried out by the external entity that she would realize that it was not an object acting as an extension of her will.

An important question that stems from this train of thought is how often external forces stop or block our active engagement with our free will. If external forces often block our ability to continuously engage with and carry out our willing, then that will definitely impact to what extent people can carry out significant conscious acts. In this way it seems fitting to conclude that significant conscious acts, which seem to be the picturesque decisions to depict one exerting one's free will, can be prevented by external forces. This is vital to the Free Will debate since it seems that many thinkers agree upon the idea that an individual has free will, or at least can prove that she has free will, when she can form an intention and carry out significant conscious acts. Again, if the question of free will shifted to an analysis of the boundaries under which free will operates under and is restricted, then the approach towards examining the role of outside forces in relation to one's free will would be completely different from Wegner's explanation as to how external forces interfere with one's autonomy and carrying out intentional acts.

A direction that may be interesting and vital for the debate is the exploration of what sorts of external forces one can easily attribute agency to. For example, I do not believe that I attribute agency or my will onto external forces such as weather and gravity. I may, however, mistake a projection of a hand as my own. It would be imperative to conduct experiments in order to find what external or internal (but out of conscious control- i.e. mental disorders) factors people are generally willing to attribute agency to. Where that line is drawn will be a piece of information to help construct the boundaries under which free will operates. Overall, one's free will is always under a degree of influence from internal and external factors. The strength of the influence

varies depending on the circumstance and the Wegner experiment demonstrates that the exertion of one's will is a complicated process with its own set of hurdles.

The Wegner experiment can be taken as an indicator that the question of the nature of free will is ready to evolve to a more nuanced, complex concept. Viewing free will as a matter of degree and circumstance calls for follow-up experimentation to test the limits of free will as well as situations that seem to allow one to more easily carry out significant conscious intentional acts. This view allows the Wegner experiment to act as a rudimentary exploration of the nature of free will as it relates to external forces, which allows for the free will debate to become much more exciting and dynamic in nature. It is in this way that the Wegner experiment scratches the surface of the dynamism of the nature of free will.

A Hypothetical Proposal

Here is an example of a theoretical experimental design that would exemplify many of the traits of an ideal experiment for the purposes of the Free Will debate:

Boston College has agreed to fund a collaborative experiment between the Philosophy and Psychology departments on the topic of Free Will. Advertisements are put up throughout the city of Boston, perhaps in locations such as the MBTA trolleys. These advertisements are strategically placed so that a variety of people throughout the city of Boston will be able to find out about the experiment and have the opportunity to participate. The advertisement is relatively vague, asking if anyone is interested in participating in a one-day neuroscientific experiment and being paid a thousand dollars for their participation. A phone number and email is at the bottom.

Numerous people across the city of Boston apply to partake in the experiment as they are enticed by the thousand-dollar compensation. Those who are selected for an interview come and are asked a series of questions to see if they are fit to participate in the experiment, but the participants are not told much about the nature of the experiment other than it involves the use of an fMRI machine, which would monitor their brain activity. They are also told that the experiment from start to finish would take no longer than three or four hours. The ones who are selected to participate are told to return the following week. Each participant is scheduled to come on a separate day or at least four hours apart from another participant.

The participant comes at her scheduled time to a laboratory building. The neuroscientist running this portion of the experiment would lead the participant to a room with a video camera turned on and facing the participant and an fMRI machine. She would place the extensions of the machine onto the patient to monitor the patient's neural activity and while doing so would explain to the participant how the machine works, how the machine is put on someone, and how to safely take the extensions of the machine off one's body. The experimenter would then tell the

participant that she needs to leave the room to get some papers and scientific instruments, and will be back in five minutes. The experimenter leaves the room and the real experiment begins.

The experimenter is not to come back to the room for two hours. During this time, the experimenter and a group of scientists and philosophers conducting this research experiment would sit patiently outside near the room. About fifteen minutes after the experimenter leaves the room with the participant in it, the experimenter and some of the researchers will cause a bit of commotion outside of the room, walking quickly and talking loudly and acting as if there is some emergency in another room that needs to be dealt with immediately. The participant in the room will more than likely wait for the experimenter to return for the first fifteen minutes. After hearing that there is a situation in another room or at least in the building, the participant will realize that the experimenter is probably preoccupied with the commotion outside and now the participant feels that she will need to make a decision. She can continue waiting for the experimenter, or she can leave. She might initially decide to stay but as another hour passes may suddenly change her mind. She may feel torn between the two decisions until she finally decides to leave. She may develop a preemptive plan to stay for another twenty minutes and leave if by that time the experimenter has not returned.

If the participant leaves the room before the two-hour mark, she will be immediately greeted by the researchers waiting outside the room and will do an exit interview in which she will recount her emotional experience and the decision-making process that unfolded throughout the experiment. If the participant stays for the full two hours, the experimenter and the other researchers will return to the room and conduct the exit interview in there.

The main reason that this experiment is an ideal model for the near future of the Free Will debate is that it allows the participant to experience a scenario in which she can freely exert her will in the form of nuanced decisions. She is consciously exerting her will in a scenario that

has a real consequence. The draw of the experiment was the thousand-dollar reward for participating, and the individuals who are participating in the experiment will more than likely find it difficult to make a decision after the experimenter leaves the room because leaving the room before, as she understands it, the experiment has started will more than likely mean forfeiting the money. Therefore, the decision being made is a significant one with real life consequences.

The experience examines the making of conscious, significant decisions in an environment that allows for the recording of neurological data from the fMRI machine and the recording of the faithful account of the participant's experience (as acquired in the exit interview). This dualistic view into the human person exerting her will has the potential to provide extremely valuable insight into the neuro-physical and emotional complexity that accompanies one's experience of freely willing. Thus, the phenomenology and the neuroscientific data intersect in an experimental environment.

The hypothetical experiment proposed in this section is a type of scenario that many thinkers in the contemporary Free Will Debate would agree illustrates an exertion of a free will, should it exist. The purpose of this experiment is to help direct future experimentation. For example, if it is found that all the brain scans differ from individual to individual, then Libet-style experiments that are focused and action-specific may be an effective means of collecting data to uncover the nature of human free will. If the various scans show a pattern between individuals with similar experiences, then experiments focused on those portions of the brain or those specific type of significant decision may be worth focusing on for future data collection. Not many experiments have been carried out that are of a similar design to the one proposed, but it does follow this paradigm's idea of how free will is exerted.

Where Neuroscience Can Lead the Debate

Neuroscience has the potential to lead the Free Will debate into an extraordinarily dynamic paradigm, but a few aspects of the contemporary debate should be altered to truly set the debate in motion. The most important factor is that the underlying question should switch from being something along the lines of "Do humans possess free will?" to something more along the lines of "Under what conditions can a person be said to be acting as a result of her free will?" This shift in the debate away from a yes/no question to an issue of conditions, degree, and nuance is something that is subtly suggested in the works of Timothy O'Connor and Adina Roskies.[100] O'Connor heavily scrutinized the Libet experiment in terms of its importance and its effectiveness, which appeared to be a call for more nuanced and properly constructed experiments in the near future of the debate. Adina Roskies' suggestion for a more neurally complex version of the concept of intention and intentionality can easily be transferred to a call for a better understanding of the intricate nature of free will. If the idea of free will were to become as complex as her idea of intentionality, then a clear-cut, widely agreed upon definition of free will would become extraordinarily difficult to find. Free will as understood as a capacity does not require a definition, but can suffice with a set of conditions under which it can operate.

One of the major questions that sprung from the examination of the Libet experiment was whether or not free will could only truly manifest in decisions to act that were made consciously. After the Libet experiment became a topic of discussion amongst thinkers in the contemporary Free Will debate, many questions regarding the relationship between consciousness and free will

[100] In Adina Roskies' work she briefly mentions that elements of human nature, such as volition and free will, are much more dynamic, complex, and multi-dimensional than many presuppose. Supposedly their essences and manner of operating cannot be captured in one experiment or one perspective. Roskies suspects that many parts of the brain are involved and many different emotional and mental processes/functions must be examined to fully understand the nature of either. Adina L. Roskies, "How Does Neuroscience Affect Our Conception of Volition?" *Annual Review of Neuroscience* 33, no. 1 (2010): 116, accessed October 14, 2015, http://isites.harvard.edu/fs/docs/icb.topic889975.files/.

became focal points of the debate. To some, it seemed that strong evidence for or against the existence of a free will lay in this dynamic. Was consciousness necessary for a cohesive understanding of free will? If one made the decision to act and did not consciously initiate the action, then can the action be considered free or is it purely determined by the biochemical chain of events that led to the unconsciousness firing electrical signals that made one execute the intended action? In order words, does one need to consciously make decisions in order to be considered free? What does this mean and how exactly do these two concepts, free will and consciousness, fit together?

If it is found that many decisions that are typically associated with free will actually stem from the unconsciousness, what does that mean for the free will debate? The average person likes to think that she is in control of her body. If she wills herself to act in a certain way, she would expect that the decision stems from her consciousness and that she consciously carries out her action in such a way that during its execution she can consciously alter it. For example, if a woman decided to lift her arm above her head, she would consciously will herself to do so. She would then consciously carry out the action, and while she is lifting her arm up she would have the conscious ability to veto the decision (put her arm down or stop raising it at a certain point) and to control it (she may lift her arm in a specific manner that is very controlled). The idea that the decision to raise her arm, along with other actions that seem to stem from the consciousness, actually originates from her unconsciousness is an unsettling thought to many thinkers in the debate.

The unconsciousness and consciousness are both mysterious entities in that neuroscience has not yet been able to fully understand where each manifests throughout the brain and what each controls. It is also unclear exactly how the two communicate to each other. In the midst of this mystery, why is it so unsettling to think that more of one's actions may in fact originate from

the unconsciousness than one may have originally anticipated? The answer lies in the conventional impression of the relationship between consciousness and unconsciousness. Many people understand these two entities to be completely separate from each other. Consciousness allows one to be "awake" and in control when acting to decide whereas the unconsciousness may make decisions for us in a sense. In other words, the average person has the impression that the unconsciousness is a part of the brain that is not necessarily under one's control. Thus, if an action stems from an intention or electrical signal formed from the unconsciousness, it is not truly under that person's control.

There is much about the human mind that is still very much a mystery and neuroscience is still figuring out what much of its data really means in terms of human behavior. Experiments like the Libet and Soon experiments may in fact be dealing with decisions that stem from the unconsciousness, but the unconsciousness may also be closely related to the consciousness. Perhaps the roles of both entities are closely intertwined and intimately interconnected. It may also be the case that free will is optimally exerted when the intentions for actions stem from the consciousness and may be somewhat hindered or limited when intuitions to act stem from the unconsciousness.

An example that can prove useful in thinking about the role of the awareness, consciousness, and the unconsciousness in human free will is that of driving. When one is beginning to learn to drive, every action of driving, whether it be lightly stepping on the gas pedal or looking in the rearview mirror, is a decision that must be actively thought through and one can feel one's awareness of consciously forming and carrying out those significant actions. However, as one drives for an extended period of time, those same actions will begin to happen more automatically, and some drives may even feel as though one is "on autopilot," so to speak. Perhaps these actions and the decision-making process that accompanies driving becomes so

familiar that it goes from being something one is constantly conscious of to becoming more a part of the realm of the unconsciousness. It could also be the case that driving always involves both consciousness and unconsciousness, but the pathways and communication between the two over time becomes so established that it seems seamless to the individual.

Another important factor of the debate, which is referenced by both Timothy O'Connor and Adina Roskies, is that the type of decision that is tested for in the neuroscientific experiment should help determine whether the experiment should be central to the Free Will debate. Many thinkers in the debate seem to be able to agree on what kinds of decisions one feels is a result of the exertion of one's free will (this type of decision is typically characterized as a conscious significant decision). Therefore, thinkers in the debate should turn their attention to the experiments and data that follows from the intending and carrying through of these decisions. It will also be interesting to see if the types of decisions one oftentimes associates with the exertion of a free will in fact stems from the consciousness or unconsciousness.

Part of the idea of consciously being able to intend and carry out actions has to deal with the idea that one *feels* free and in fact has the autonomy that one feels one does. This can also be explained as one possessing the volition and freedom to act in an autonomous manner. The feeling that one is free is not an insignificant factor in the experience of one's freedom. The intuition that one feels free may in fact hold more information on what it means to truly be free than many thinkers realize. Many people consider themselves to be freely willing beings that are able to exercise their freedom in a way that is significant to them. Thus, the idea that one must be able to carry out significant actions in order to be free may be a notion that stems from the freedom and volition one instinctively feels. If that is the case, then what is the line that is drawn between significant and insignificant actions?

The debate could seriously benefit through a consensus on the conditions in which these philosophical and neuroscientific terms, such as consciousness, volition, and free will, can be present. This would be much more useful than the conventional attempt at a consensus on definitions of these philosophical terms. Important questions to ask are as follows: In what cases are these components considered effective and necessary to free will? Why are they important to one's idea of being able to freely will? How can these ideas be observed and measured through neuroscientific experiments? The length of the Free Will debate, from its conception, is long enough where it is evident that strict definitions of volition, free will, and freedom seem almost impossible to establish amongst thinkers in the debate. However, establishing sets of conditions that allow the common idea of this entity to be present in one's life may be much more effective. In this scenario, there would need to be agreement as to what the experience of freely willing is like as well as how the feeling of experiencing one's free will corresponds to the nature of the activity. At the very least, there would need to be agreement as to what factors are involved in the exercising of one's ability to freely will.

It seems that the majority of the work that is in the near future of this debate will have to deal with sorting through the nuances of the debate. If the terms cannot have universal definitions, then they must have universal conditions. These conditions will be able to be fleshed out through experimentation and theorizing. In this way, the Free Will debate may go through a sort of revolution. The previously revered categories of Compatibilism and Incompatibilism may very well fall apart and become relics of a past paradigm while different sets of plausible conditions become the new way of distinguishing theories and thinkers in the debate.

This would be the beginning of a sort of evolution in the main approach of thinkers in the debate and would result in much more experimentation for the sake of expanding and better understanding vague ideas and limitations. This may lead to a new type of compatibilism, one in

which it is innately understood that the process of freely willing is naturally integrated in a world full of internal and external factors. Thinkers would then fall on a spectrum of potential conditions for “maximal” free will as oppose to arguing for the existence or nonexistence of a metaphysical entity. Another potential product of this shift in ideology could be the increase of discussion between philosophers and neuroscientists. If philosophers and neuroscientists interested in this topic were involved in more frequent discussions, the greater implications of the experimental parameters and the philosophical implications behind the collected data would be more thoroughly scrutinized. Amongst other things, this could lead to new creative and consistent theories emerging from collaborations and cross-disciplinary projects.

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