A Case for Monistic Idealism:

Connecting Idealistic Thoughts from Leibniz to Kant

with support in Quantum Physics.

Erik Haynes

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Contents

Abstract

Through the analysis of idealistic arguments and evidence from physics, it will be demonstrated that monistic idealism has a great deal of explanatory power as a metaphysical system for the reality that one experiences. Some of the arguments that support this claim include the inadequateness of Cartesian matter, the seemingly infinite divisibility of atoms, matter being reducible to sensations, the unnecessary aspect of matter, and simplicity. Evidence from quantum physics includes such factors as the necessary role of an observer in the collapse of a quantum wave function and the element of nonlocality. Psychological experiments including nonlocal communication, the power of mental force, and the placebo effect further justify the case for monistic idealism.

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Introduction

Everything is connected. That theory has been around for ages and the question of how everything is connected has troubled philosophers for just as long. Thales was the first recorded philosopher (c. 600 B.C.) to propose a solution to this question in his theory that water is what connects everything. Ever since Thales, many different solutions to this problem have been developed. In ancient times this question was considered the "problem of the one and the many," but it eventually became expressed in the mind-body problem as the theories ultimately fell into three categories. The first category is labeled "materialism," (also known as physicalism) which states that everything is ultimately material (or physical) in nature, and so everything is connected through material substance. In other words, the physical is the metaphysical foundation of all things. Materialism is a variant of the metaphysical view called "substance monism," which argues that the foundation of all things is ultimately one in nature. For materialism, everything is one in the sense that everything is material. Monism contrasts with the view of "pluralism," which claims that there is more than one substance that make up reality. The main type of metaphysical pluralism is called "dualism." This view holds that there are two foundational types of substance that make up reality, which are "mind" and "body." This view argues that there is more to this world than just the material aspects, namely that there is a spiritual or conscious side to reality that can be classified as "mind." These are two distinct substances, mind and body, that work together to form this world. The third view is called "idealism" and it states that the foundation of all things is ultimately immaterial. This foundation can be any immaterial substance such as consciousness, mind, or spirit. Thus, this view argues that everything in reality reduces to an immaterial foundation. Philosophers typically categorize idealism as a type of substance monism, just like materialism.

Each of these three views (materialism, dualism, and idealism) faces numerous problems in their explanation of reality. The main problem facing materialism is how to reconcile it with such phenomena as mind, consciousness, and spirit. The primary dilemma with dualism is explaining the interaction between mind and body if they are two separate substances. Another issue facing dualism is simplicity or Occam's razor: Why multiply the principle foundational elements if an explanation with one principle works sufficiently? The main issue that idealism contends with is how to explain the physical appearance of the world. Materialism and dualism will not be the focus of this project. Instead, it will focus on consciousness and idealism. Since consciousness poses a serious problem to both materialism (viz., how to account for it) and dualism (viz., how it interacts with body), the view of idealism should at least be examined, and that is what this thesis will do. Steven B. Cowan and James S. Spiegel, both proponents of Berkeleyan idealism (Cowan a recent convert),[1] coedited *Idealism and Christianity,* Volume 2: *Idealism and Christian Philosophy*, which was published by Bloomsbury Academic just this year with the goal of redeeming Berkeleyan immaterialism, contending that it has not been taken seriously by most philosophers. Cowan and Spiegel "believe that Berkeleyan idealism—the thesis that all that exists are minds and their ideas—has immense benefits for virtually every area of human understanding, from theoretical issues in philosophy and theology to the most practical concerns of human life."[2] It is interesting to note that in their project they refer to "substance dualism" as a version of materialism because they consider materialism to be "any view which affirms the mind-independence of physical objects."[3] This is not the case for this project, but

[1] Steven B. Cowan and James S. Spiegel, eds., *Idealism and Christianity,* vol. 2*, Idealism and Christian Philosophy* (New York: Bloomsbury Academic, 2016), iix.

[2] Ibid., 1.

[3] Ibid., 6.

neither will dualism be considered in detail due to the scope of this thesis.

This project will examine some of the arguments and evidence for idealism to determine if there are any sound reasons for believing in such a metaphysical system. Idealism can account for consciousness easily enough and it fulfills Occam's razor better than dualism, inasmuch as it is a monistic system. The main questions that remain will be whether there are good reasons for believing in idealism and how exactly this system can explain the material aspect of the world that everyone experiences. Several principal idealist philosophers and their arguments will be studied, including Gottfried Wilhelm Leibniz, George Berkeley, and Immanuel Kant. These philosophers will be the topics of the first two chapters. Scientific evidence will be examined in chapter three, with the focus on experiments done in quantum physics and psychology. Such topics will include the theories and experiments done by Niels Bohr, Werner Heisenberg, Max Born, Eugene Wigner, John von Neumann, Albert Einstein, Boris Podolsky, Nathan Rosen, Erwin Schrödinger, Alain Aspect, John Bell, and others. Such theories and experiments will include the Copenhagen interpretation of quantum physics, Einstein-Podolsky-Rosen paradox, Schrödinger's equation, Schrödinger's cat, wave-particle duality, quantum entanglement, Bell's theorem, and Aspect's experiments. Experiments in psychology will also be considered, including such topics of nonlocal communication, mental force, and the placebo effect.

The specific warrants for idealism will be a combination of arguments from Leibniz's monadic idealism, Berkeley's subjective idealism, and Kant's transcendental idealism, which, taken together, express a more encompassing monistic idealism. Leibniz argues that this world is created from simple substances that he calls monads. He argues that every monad has a certain level of perception[4] and that these monads are all connected through God's consciousness in a

[4] G.W. Leibniz, *The Principles of Philosophy known as Monadology*, trans. Jonathan Bennett, 3, last modified July 2007, accessed April 24, 2016, http://www.earlymoderntexts.com/assets/pdfs/leibniz1714b.pdf.

universal harmony.[5] This type of idealism is similar to Berkeley's view that existence (or "being") is to perceive or be perceived. A priority is placed on the One that always perceives everything, God, and the means through which He does so.[6] Berkeley is essentially arguing that reality ultimately exists and is connected through God's consciousness. Thus, from Leibniz and Berkeley one can already begin to see a universal theme in their idealism. This theme is that God, as creator, facilitates a perception of reality in knowing subjects. This manifestation of reality is ultimately done so that spiritual beings (souls/persons) can have a sensible (or tangible) reality for experience and life (tangible meaning that God produces for His creatures a reality they can experience through sensations, though this does not require a separate substance, matter). In fact, A.A. Luce argues that "[m]atter by definition is invisible and intangible; it does not match our sensory experience; it cannot be applied thereto; it cannot test the quality of what we see and touch…. Problems of sense-perception must be solved in terms of the perceivable by sense."[7] Idealism contends that the existence of sensible reality stems completely from God's production of it. Thus, the ultimate basis of reality is God's consciousness. This reality is made sensible and has a mode of extension, but the primary substance is consciousness (or thought, mind, idea, spirit, etc.). Idealists like Berkeley contend that the reality of the material world is not being denied, just understood in a different way (through sense perception and a different understanding of the metaphysical foundation). This philosophy argues for a unified consciousness at the core of reality. Humans are primarily conscious beings (or souls) with a tangible sense of reality provided by, and connected through, God's consciousness. This can be

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[5] Leibniz, *Monadology*, 8.

[6] George Berkeley, *The Principles of Human Knowledge*, trans. Jonathan Bennett, 18, last modified November 2007, accessed April 24, 2016, http://www.earlymoderntexts.com/assets/pdfs/berkeley1710.pdf.

[7] A. A. Luce, *Sense Without Matter or Direct Perception* (Edinburgh: Nelson, 1954), 97.

compared to the way in which the dream world seems to incorporate everything that reality does yet one would not say that the dream world contains matter since dreams exist completely in the mind. Since the mind is capable of producing a tangible reality in the dream world, then how much more so would God's mind be capable of creating a tangible reality for His creation? God's infinite mind would certainly be capable of creating an entire reality that people can live in without actually needing to create a separate substance of matter. As Berkeley says, matter would be an unnecessary tool for God.[8] It can also be seen how God's infinite mind and creation would have natural laws that govern this reality, because they would be stemming from the nature of His mind. This dream analogy will be helpful for understanding the type of metaphysical reality that these philosophers were explaining. The monistic idealism argued for will be a broader type of idealism with a unified consciousness as its foundation. This type of idealism will be argued for rather than a specific philosopher's idealism due to the scope of this project and in order to argue that idealism in general should be considered more seriously and not necessarily one version of idealism. Therefore, the aim of this project will be to combine several of the arguments and support from Leibniz, Berkeley, Kant, quantum physics, and psychology to propose a monistic idealism that can be defended as a strong theory that should require greater consideration as a solution to the mind-body problem.

By way of clarifying the limitations of this project I will include a few points. Before discussing these I want to mention on the topic of clarification that all italicized words within quotes throughout this project are from the author quoted and not me. With that proviso aside, I will not have space in this project to discuss any branches of philosophy that may stem from the

[8] George Berkeley, *Three Dialogues between Hylas and Philonous in opposition to Skeptics and Atheists*, trans. Jonathan Bennett, 34, last modified November 2007, accessed April 24, 2016, http://www.earlymoderntexts.com/assets/pdfs/berkeley1713.pdf.

specific metaphysics of idealism that I will be discussing. Thus, such topics as freedom, ethics, morals, epistemology, etc. will not be discussed here. There will also not be enough space in this thesis to discuss in depth each view of materialism, dualism, and idealism. Materialism and dualism will not be discussed much because my primary focus will be on idealism. Materialism and dualism both have ways of dealing with the mind-body problem; however, in light of the problems that these views do face, I am in a sense setting them aside in order to more fully consider idealism. Thus, there will be no arguments against materialism or dualism, except in passing, due to the length of this project; only arguments in favor of idealism will be given. I will also be unable to discuss in depth the different forms of idealism. Instead, the focus of this paper will not stray far from the specific views of Leibniz, Berkeley, Kant, and the more broad form of monistic idealism that incorporates aspects of each. I will in some ways be taking the assumption of theism because it is not my purpose to provide a proof for God's existence. Rather, this discussion of idealism will provide support for a theistic God inasmuch as I argue that a conscious creator is a strong explanation of how reality came to be. It is not my main objective to prove that God exists, but to discover the best explanation of the reality we experience, which ends up including God necessarily. My goal is to show that it is plausible to view the nature of everything in reality as consciousness (or spiritual).

Chapter 1

Support from Leibniz

It was in the fifth century B.C. that Democritus proposed his theory of atoms as the means by which everything is connected. In the eighteenth century, Leibniz was arguing that his theory of monads was the best explanation of metaphysics and that monads were similar to atoms, albeit that they were spiritual in nature. He states in *Monadology* that "[t]here must be simple substances, because there are composites. A composite thing is just a collection of simple ones that happen to have come together. Something that has no parts can't be extended, can't have a shape, and can't be split up. So monads are the true *atoms* of Nature—the elements out of which everything is made."[9] It was not until the twentieth century that technology developed enough to finally discover the atom, which brought strong support for each of these theories. The atom will be discussed more in chapter three, but Leibniz's metaphysical system is built upon his monadology and this chapter will examine that system. The three key elements of Leibniz's monadology that will be outlined are his universal harmony that brings his system into a connectedness through God's consciousness, the incorporeal nature of monads, and his argument that perception cannot be explained by mechanical principles.

Leibniz emphasizes both the separateness and connectedness of monads. He first emphasizes the separateness of monads by clarifying that they are windowless and do not affect one another.[10] Frederick Copleston explains that "each monad forms a world apart, in the sense

[9] Leibniz, *Monadology*, 1.

[10] Ibid., 2.

that it develops its potentialities from within."[11] Although monads are not able to directly interact with one another, Leibniz does not deny "that on the phenomenal level there is what we call efficient or mechanical causality: he did not, for example, deny that it is true to say that the door slammed because a gust of wind exercised pressure on it. But we must distinguish between the physical level at which this statement is true and the metaphysical level at which we speak about monads."[12] Due to this separateness of each monad, Leibniz's is a pluralistic form of idealism. However, one of his successors, Hermann Lotze, discerning the unity of this system, developed it more along monistic lines.[13] According to Hiralal Haldar, Leibniz begins by emphasizing the separateness of the monads, "but, in the end, he is compelled to conceive of them as proceeding from and depending on God and as organized by Him into the unity of a coherent world. Lotze makes this deeper thought of Leibniz prominent. He shows that so far from being independent of each other, things are real only as they are related to each other. To be is to 'stand in relations.'"[14] The connectedness of monads in Leibniz's system takes place through God. Leibniz mentions this and makes several important remarks about the mind in his *Discourse on Metaphysics*:

> Minds are actually the most perfectible of substances, and their perfections have the special feature that they obstruct one another the least, or rather that they help one another—for only the most virtuous could be the most perfect friends. From which it plainly follows that God, who always aims at the greatest perfection in general, will have the greatest care for minds, and will give to them (not only in general, but also to each particular mind) the highest level of perfection that the universal harmony will allow. It can be said indeed that God's being a mind is what qualifies him as the reason why things exist. If he couldn't voluntarily choose the best, there would be no reason why one

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[11] Frederick Charles Copleston, *A History of Philosophy*, vol. 4*, Modern Philosophy: From Descartes to Leibniz* (New York: Image Books, 1994), 308.

[12] Ibid.

[13] Hiralal Haldar, "Leibniz and German Idealism," *The Philosophical Review* 26, no. 4 (1917): 393.

[14] Ibid.

> possible thing should exist rather than some other. So of all the features of created things that God takes into account, he attends first and foremost to the quality that he shares with them, namely that of being a Mind. Only minds are made in his image, are of his race (so to speak), are like children of his house, for only they can serve him freely, and act in imitation of the divine nature, knowing what they are doing. A single mind is worth a whole world, since it not only expresses the world, but also knows it, and governs itself there after the fashion of God. Thus, it seems that although each substance expresses the entire universe, Minds express God rather than the world, whereas other substances express the world rather than God.[15]

Leibniz's system is based on an understanding that God is the most perfect being. Leibniz points out in this passage that minds are the most perfectible of substances and that they hold the highest value for God. He also explains that it is because God is ultimately Mind that things even exist. Thus, God's mind (or consciousness) is the foundation and reason why everything exists. God's mind and perfection grant Him the ability to choose the best possible world to exist. This is also why Leibniz claims that only minds are made in God's image and express God, while other substances only express the world. Copleston contends that the reason Leibniz distinguished minds (or souls) from normal monads stemmed from a dissatisfaction he had with the atomic theory of Democritus and Epicurus:

> [T]he atoms of Democritus and Epicurus were not true unities. Possessing size and shape, they could not be the ultimate factors discoverable by analysis. Even if their physical indivisibility were postulated, they would still be divisible in principle. The ultimate constituents of things must, therefore, be "points," though not mathematical points. They must be, then, metaphysical points, distinct both from physical points, which are indivisible in appearance only, and from mathematical points, which do not exist and cannot together form bodies. Further, these metaphysical points, which are logically prior to body, must be conceived after the analogy of souls. There must be some internal principle of differentiation, and Leibniz decided that these substantial units are distinguished from one another by the degree of "perception" and "appetite" which each possess. He frequently called them "souls," therefore, though in order to be able to distinguish between souls in the ordinary sense and other substantial units he came to employ the word "monad" as a general term. "*Monas* is a Greek word which signifies unity or that which is one."[16]

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[15] G.W. Leibniz, *Discourse on Metaphysics*, trans. Jonathan Bennett, 25, last modified July 2007, accessed April 24, 2016, http://www.earlymoderntexts.com/assets/pdfs/leibniz1686d.pdf.

[16] Copleston, *From Descartes to Leibniz*, 297-298.

So there is an important distinction between monads that make up minds or souls and monads that are used to create the world. Each mind is significant since each one is worth a whole world and each mind is separate, yet all minds are connected through God. Haldar thoroughly explains this, stating, "[W]hatever may have been the starting point of Leibniz, his final view of the world is that it is an orderly whole of interrelated reals, which are monads possessing ideas of different degrees of clearness, all comprised within the being of God who, if He transcends them, is also immanent in them and of whose mind they are the embodiment or expression."[17] This orderly whole of interrelated reals, whose individual perceptions are constituted by God, is exactly what Leibniz is discussing in the passage above. The interrelatedness is what Leibniz referred to as the "universal harmony." Leibniz's monads are all separate, simple substances, yet they all work together through a harmony constituted by God. Haldar agrees that Leibniz introduced a foundational idea (which was reaffirmed by Kant, Hegel, and Lotze) that at the basic level this world is spirit and its nature is to be one in many. Haldar also argues that Leibniz struggled with reconciling the unity and plurality of this concept, but recognized both of these aspects of reality in his philosophy.[18] Thus, Leibniz emphasizes the key concept that the core of reality is spirit and not physical substance. A foundational point of his philosophy was to deny Cartesian matter.

The second key element of Leibniz's monadology is the incorporeal nature of monads. The main system of thinking that surrounded Leibniz at the time was the concept of matter as understood in the Cartesian sense. Leibniz found several faults with this concept of matter. In his *Philosophical Essays*, Leibniz explains, "I don't really eliminate body, but reduce [*revoco*] it to what it is. For I show that corporeal mass [*massa*], which is thought to have something over and

[17] Haldar, 379.

[18] Ibid., 393-394.

above simple substances, is not a substance, but a phenomenon resulting from simple substances, which alone have unity and absolute reality."[19] Leibniz thus denies matter in the Cartesian sense that sensible objects have a material basis. Instead, Leibniz argues that matter, as people understand it, is built upon an incorporeal substance, instances of what he calls simple substances, or monads. This new understanding of substance could simply be viewed as a different understanding of matter rather than a complete rejection of it. Paul Redding argues that Leibniz attempts to reconcile differing views on the subject. He claims that one of the traits of continental idealism in general is "[t]he stance of *rational reconcilationism*— the irenic intention to reconcile conflicting stances or orientations towards the world, rather than simply take sides…. Thus Leibniz can be interpreted as attempting to reconcile the modern mechanistic worldview of Galileo and Newton with ancient Greek metaphysical notions based on the Aristotelian concept of 'substance.'"[20] As Leibniz saw the world from his interrelated perspective, he attempted to reconcile the differing views of his time. One reason Leibniz sought to understand substance in a new way was that everything material is only made up of something smaller. In their book *Idealism: The History of a Philosophy*, Jeremy Dunham, Iain Hamilton Grant, and Sean Watson explain how both Leibniz and Descartes argued that the material atom could not be the foundation of the universe because everything material is comprised of something smaller than that certain quantity of matter. The foundation of extension must instead be something that is non-extended or incorporeal in nature.[21] As Dunham, Grant, and Watson state, "The natural world must have non-spatiotemporal constituents as its prerequisites. This should have been the

[19] G.W. Leibniz, *Philosophical Essays*, trans. Roger Ariew and Dan Garber (Indianapolis: Hackett Publishing Company, 1989), 181.

[20] Paul Redding, *Continental Idealism: Leibniz to Nietzsche* (New York: Routledge, 2009), 3.

[21] Jeremy Dunham, Iain Hamilton Grant, and Sean Watson, *Idealism: The History of a Philosophy* (Montreal: McGill-Queen's University Press, 2011), 62.

conclusion to Descartes' metaphysics. These non-extended constituents (monads) are the true unities in nature and the ultimate forces from which extended nature derives its power."[22] It makes sense that space and time could not be founded on something that is also spatiotemporal; its foundation must lie on something outside of space and time. Since space is ultimately extension, this spatiotemporal reality must be based on something non-extended, or rather something incorporeal, like Leibniz's monads. These monads, which have a spiritual nature stemming from God's mind, would make for a more sound foundation for the world that one experiences. Dunham, Grant, and Watson explain that another argument Leibniz had against the Cartesian understanding of matter and Descartes' natural philosophy is that if matter were just extension, then "there could be no true unities in nature and only aggregates. All true unities must have some metaphysical substantial union. A sandcastle does not have a true substantial union, but is merely an aggregate, whereas I, on the other hand, am not merely an aggregate, but a substantial union whereby all of my organs work together and create a single being— a unity."[23] Thus, the basis of matter must be something more foundational and unified than mere tiny, physical substances. Dunham, Grant, and Watson explain that "for Leibniz, no real unity can be discovered in extended matter alone, only aggregation; however, in the metaphysical realm, substantial union can be found and it is at this level that my unity can be explained. The true unities from which the world is composed are Leibniz's monads: non-spatiotemporal substances that are the true purveyors of qualities and phenomena."[24] In other words, something must be holding all of the matter together in a unified way, and this cannot be mere matter alone

[22] Dunham, Grant, and Watson, 62.

[23] Ibid.

[24] Ibid.

but something more foundational, something not limited by space and time, and infinitely divisible, but something nonspatial, nontemporal, i.e., "simple." If this is the case and there is something deeper than matter, then what exactly is matter to Leibniz? He claims that "it is not necessary to say that matter is nothing, but it is sufficient to say that it is a phenomenon, like the rainbow; and that it is not a substance, but the resultant of substances, and that space is no more real than time, that is, that space is nothing but the order of coexistences, just as time is the order of things that have existed before [*subexistentia*]."[25] Since the metaphysical foundation of reality, according to Leibniz, is actually the incorporeal or spiritual monads, matter does not exist on its own in his system. Rather, it is dependent on monads, making matter more of a phenomenon experienced by monads than a reality in and of itself. Leibniz therefore reveals that he is searching for the foundation of matter and explaining it from a different perspective rather than denying it altogether.

The third key element of Leibniz's metaphysics outlined in this project is his understanding of perception. He states in *Monadology* section seventeen: "It has to be acknowledged that perception can't be explained by mechanical principles, that is by shapes and motions, and thus that nothing that depends on perception can be explained in that way either."[26] Leibniz provides the following analogy to further describe this insight:

> Suppose this were wrong. Imagine there were a machine whose structure produced thought, feeling, and perception; we can conceive of its being enlarged while maintaining the same relative proportions among its parts, so that we could walk into it as we can walk into a mill. Suppose we do walk into it; all we would find there are cogs and levers and so on pushing one another, and never anything to account for a perception. So perception must be sought in simple substances, not in composite things like machines. And that is all that can be found in a simple substance—perceptions and changes in perceptions; and those changes are all that the internal actions of simple substances can

[25] Leibniz, *Philosophical Essays*, 307.

[26] Leibniz, *Monadology*, 3.

consist in.[27]

Thus, perception is best explained through incorporeal simple substances since material composite things are unable to account for it. Dunham, Grant, and Watson explain that it is not possible to receive sensations from external objects in the views of Leibniz, Malebranche, or Berkeley. This is so because they believe that extension does not have the necessary means for causing any effect on the mind.[28] This is one of the main issues facing the mind-body problem for dualism. According to Dunham, Grant, and Watson, all three of these philosophers agree that only God can provide people with the ideas that produce their phenomenal experience.[29] Dunham, Grant, and Watson draw a distinction between the views of Malebranche and Leibniz on this subject. They explain, "[F]or Malebranche, this doctrine means that the eternal and infinite 'Ideas' cannot exist in the minds of finite beings. To perceive any Idea is to participate in God's eternal essence and God is our only light. For Leibniz, God replicates this very infinite and eternal essence in every single substance; every monad is omniscient, albeit confusedly."[30] Thus, for both Malebranche and Leibniz, the origin of ideas and the means of perception stem straight from God. For Leibniz, "Our phenomenal experience is grounded by this replication and we perceive as mirrors of God… [so] Leibniz moves from a vision *in* God thesis to vision *by* God. God is still each monad's only 'light.'"[31] The analogy that people perceive as mirrors of God demonstrates well how people's perceptions ultimately have their origin in God, who is the source by which they see. Leibniz defends this view in his fifth reply of an exchange of papers

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[27] Leibniz, *Monadology*, 3.

[28] Dunham, Grant, and Watson, 72.

[29] Ibid.

[30] Ibid.

[31] Ibid.

between him and Samuel Clarke.

Leibniz rejects the idea that images of things are conveyed by the sense organs to the soul.[32] He argues that there exists no conceivable vehicle or gate through which these images can travel from the organ to the soul.[33] Against Cartesian dualism, Leibniz states: "The new Cartesians have shown well enough that this notion in the vulgar philosophy is not intelligible. It can't be explained how immaterial substance is affected by matter; and basing an unintelligible notion on that is having recourse to the chimerical scholastic notion of I know not what inexplicable 'intentional species' passing from the organs to the soul."[34] This leads Leibniz to argue that it is unintelligible to say that God discerns what happens in the world because He is physically present to things. Leibniz says this is unintelligible under the Cartesian view because God is spirit and the world is material, so how could these separate substances know anything about each other even in close proximity? Leibniz says that they cannot and this is what is now called the mind-body problem. Instead, Leibniz argues that God has knowledge about the world because every monad's "continued existence involves a dependence on him (a dependence that could be said to involve a continual production of them)…. A mere presence, or existence alongside, isn't enough to make us understand how what happens in one being could correspond to what happens in another."[35] Leibniz argues here that God is able to have knowledge about His creation because everything is of the same substance (monads) and has its origin in Him. Thus, there is no mind-body problem in his view. Minds and "matter" should be considered as being

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[32] G.W. Leibniz and Samuel Clarke, "Exchange of Papers between Leibniz and Clarke," trans. Jonathan Bennett, 42, last modified April 2007, assessed April 24, 2016, http://www.earlymoderntexts.com/assets/pdfs/leibniz1715.pdf.

[33] Ibid.

[34] Ibid.

[35] Ibid.

made of the same substance (monads), but with an ontological origin point in God. Again, Leibniz simply offers a different or deeper perspective on reality rather than denying the existence of matter. He reminds his readers that he does not acknowledge simple bodies and explains that nothing is simple besides monads, which do not "have parts and aren't extended. Simple bodies, and perfectly alike bodies (whether simple or not), are a consequence of the false hypothesis of atoms and empty space, or of lazy philosophy that doesn't push the analysis of things down to a deep enough level, and fancies it can attain to the first material elements of nature, because our imagination would be satisfied with it."[36] People can satisfy their imaginations with the idea of matter being the groundwork for all other matter, since it is all they physically see and experience every day. They do not often wonder what exactly comprises the matter they see or how they perceive it. Dunham, Grant, and Watson explain that "when we perceive external objects we do not see monads as they really are because monads do not really look like anything; they have no spatiotemporal properties. They are composed exclusively of internal perceptions and the appetite to pass from one perception to another."[37] They clarify, "This does not mean, however, that what we see is false or an illusion. Our perceptions are in reality actual 'expressions' of this external world even if there is no true resemblance."[38] Since monads possess no spatiotemporal properties, perception becomes vitally important. One's perception ultimately depends on God providing an external world for one to experience. In his *Discourse on Metaphysics*, Leibniz explains that much like the same town looks different from altered positions, each monad becomes a whole world as experienced in a way that "mirrors"

[36] Leibniz and Clarke, 32.

[37] Dunham, Grant, and Watson, 66.

[38] Ibid.

God. Leibniz states, "In a way, then, the universe is multiplied as many times as there are substances, and in the same way the glory of God is magnified by so many quite different representations of his work. It can even be said that each substance carries within it, in a certain way, the imprint of God's infinite wisdom and omnipotence, and imitates him as far as it can."[39] God's mind generates countless monads, all of which connect to His mind. Each of these monads actively connects to God and serves as a differing perspective of reality. Dunham, Grant, and Watson explain that "for Leibniz, to be is to be active; this means that all forms are in some sense active at all times and, as they are reproduced in every single monad, they are always active in every single monad."[40] According to Leibniz, although each monad is active and connected to God, they do not all share the same level of perception. Thus, many of them perceive things confusedly.[41] Leibniz elaborates by saying,

> For since all the bodies in the universe are in sympathy, our body receives the impressions of all the others, and although our senses are related to everything, our soul cannot possibly attend to each particular thing. Thus our confused feelings result from a downright infinite jumble of perceptions. In somewhat the same way the confused murmur that people hear when nearing the sea shore comes from the putting together of the reverberations of countless waves.[42]

Dunham, Grant, and Watson accurately summarize Leibniz's system, stating: "Leibniz's world is made up of an infinity of self-sufficient monads all marching to their own tune as if a world apart, although in perfect harmony with every other monad…. In addition, it expresses every other monad's current state within its being and this is how it is harmonized with its monadic

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[39] Leibniz, *Discourse*, 5.

[40] Dunham, Grant, and Watson, 67.

[41] Ibid.

[42] Leibniz, *Discourse*, 23.

community."[43] Leibniz's monadology served as an excellent beginning point for idealism and laid much of the groundwork. The next chapter will turn to the famous idealist philosophers of perception: Berkeley and Kant.

[43] Dunham, Grant, and Watson, 64.

Chapter 2

Support from Sense Perception: Berkeley and Kant

George Berkeley and Immanuel Kant revolutionized the way people think about the world. Berkeley is often considered the father of modern idealism, whether it be "subjective," "skeptical," "critical," "psychological," "panlogist," or any other modern form of idealism. Edward Douglas Fawcett claims, "[I]dealists will all alike, when pressed, concede their indebtedness to the stimulus given by Berkeley…. Well has it been said that but for Berkeley there would have been no Hume and but for Hume no Kant. Aye, and but for Kant, –Fichte, Schelling, Hegel, Schopenhauer, and many of the leading idealists of today might never have caught the sparks that kindled their genius."[44] Berkeley's full thesis can be summarized as "*esse est percipi aut percipere*: to be is to be perceived or to be a perceiver."[45] Kant is known for his Copernican revolution in metaphysics and epistemology. Both of these philosophers' arguments will be critically examined. Ultimately, support for idealism will be found in Berkeley's arguments from sense perception, Occam's razor, a dream analogy, and Kant's pivotal change in epistemology.

For Berkeley, reality is a presentment for consciousness.[46] Fawcett explains, regarding Berkeley, "[P]erception and its objects are inseparable; that the world is as truly suspended in consciousness as is the most subtle of thoughts or emotions."[47] Berkeley argues that all that exists are minds and ideas. John Russell Roberts classifies Berkeley's view as a "monism of

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[44] Edward Douglas Fawcett, "From Berkeley to Hegel," *The Monist* 7, no. 1 (October 1896): 42.

[45] Cowan and Spiegel, 3.

[46] Fawcett, 41.

[47] Ibid., 42.

minds."[48] Georges Dicker provides some insight into Berkeley's immaterialism by making the following distinctions: "By holding this view, Berkeley does not mean that rocks, trees, tables, chairs, and so on do not exist. Rather, he means that they are only collections of ideas or of what he also calls sensations, which have no existence apart from being perceived by a mind. These ideas or sensations include visual ones, tactile ones, auditory ones, gustatory ones, and olfactory ones."[49] Thus, Berkeley's system is a vastly different way of understanding reality. Berkeley points out that all a person really knows about "matter" are the secondary qualities that they experience through their senses. The qualities perceived by all five senses exist in the mind and not in matter or the object itself. Berkeley points out in *The Three Dialogues* that "if you take away all sensible qualities there is nothing left that is sensible…. Sensible things, then, are nothing but so many sensible qualities, or combinations of sensible qualities."[50] For example, Berkeley denies that heat exists independently of the mind's sensation. Dunham, Grant, and Watson summarize Berkeley's arguments for this in the following: "First, he says, heat is a kind of pain, and since, clearly, only those things capable of sense and perception are capable of experiencing pain, so heat (as a form of pain) is dependent for its existence on such sense and perception."[51] Furthermore, Berkeley uses the famous argument that "if one were to have one cold hand and one hot hand and plunge them into water at an intermediate temperature the water would feel cold to one hand and hot to the other, so how could the heat possibly be, in any sense,

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[48] John Russell Roberts, *A Metaphysics for the Mob: The Philosophy of George Berkeley* (New York: Oxford University Press, 2007), 5.

[49] Georges Dicker, *Berkeley's Idealism: A Critical Examination* (New York: Oxford University Press, 2011), 2.

[50] Berkeley, *Dialogues*, 3.

[51] Dunham, Grant, and Watson, 76.

'in' the water? What is the 'real' heat of the water?"[52] Colors provide another example. Berkeley points out that colors cannot be in things themselves because color changes with different instruments, kinds of eyes, distances, and perspectives. To counter the argument that color is in the light, Dunham, Grant, and Watson remind people, "[B]erkeley points out that even according to this account the light must 'shake' the optic nerve in order to create a 'sensation' of a colour in the 'mind.' The colour, then, has 'no existence without the mind.'"[53] Thus, Berkeley has shown that secondary qualities are mind-dependent because they are simply sensible perceptions. However, what about primary qualities such as extension, shape, motion, rest, solidity, and number? In *The Principles of Human Knowledge*, Berkeley argues, "[I]f it is certain that (1) primary qualities are inseparably united with secondary ones, and can't be abstracted from them even in thought, it clearly follows that (2) primary qualities exist only in the mind, just as the secondary ones do."[54] Berkeley then challenges his readers to attempt a mental abstraction whereby one conceives of a body extended and moving without any perceptible qualities. He argues that it is inconceivable to abstract extension, shape or motion from all other qualities.[55] Berkeley concludes that primary qualities, just like secondary ones, must exist only in the mind. Berkeley makes the following argument to further show that primary qualities are mind-dependent: "Large and small, and fast and slow, are generally agreed to exist only in the mind. That is because they are entirely relative: whether something is large or small, and whether it moves quickly or slowly, depends on the condition or location of the sense-organs of the

[52] Dunham, Grant, and Watson, 76.

[53] Ibid., 77.

[54] Berkeley, *Principles*, 13.

[55] Ibid.

perceiver."[56] The relativity of all primary qualities does seem to provide further support for them being mind-dependent, and people experience these types of relativity every day. Gary Hatfield, in his book *Perception & Cognition*, explains in detail how Berkeley changed the way of thinking about the specific primary quality of distance:

> He began from a point that was shared by intromission theorists, that distance is not "immediately sensed," but must be perceived via other cues or sources of information, whether contained in the optical pattern or received collaterally. In Berkeley's terms, since distance is not directly perceived, it must be perceived "by means of some other idea." From there, he mounted a frontal assault on the widely shared theory that distance is perceived via "lines and angles," as when distance is allegedly perceived via reasoning using the angle-side-angle relation of a triangle and the perceived convergence of the eyes, or using the known size of the object together with perceived visual angle. Berkeley's argument unfolded in two steps. First, he maintained that "no idea which is not itself perceived can be the means for perceiving any other idea." Second, he denied that we are ever aware of "lines and angles" in visual perception: "In vain shall all the mathematicians in the world tell me that I perceive certain lines and angles which introduce into my mind the various ideas of distance so long as I myself am conscious of no such thing." He explained the perception of distance by means of several cues, including: (1) the interposition of numerous objects between the viewer and the target object, (2) faintness of the target, (3) visible magnitude in the relation to known size, (4) height in visual field (objects further off are typically higher in the field of vision but below the horizon), and (5) the muscular sensation accompanying the rotation of the eyes during convergence.[57]

Through these challenges of how people perceive such things as distance, Berkeley made popular the understanding that people "learn to see."[58] Another argument Berkeley uses to support this is his so called "Master Argument." In this argument he challenges people to conceive of any object that is completely independent and unperceived by any mind. He argues that this cannot be done since if a person conceives of an object, then they perceive it, too. Matthew Densley explains that this argument claims, "[W]e can no more conceive of something

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[56] Berkeley, *Principles*, 13.

[57] Gary C. Hatfield, *Perception and Cognition: Essays in the Philosophy of Psychology* (Oxford: Clarendon Press, 2009), 134-135.

[58] Ibid., 135.

existing unconceived than we can see something unseen."[59] Cowan and Spiegel explain that Berkeley responds to John Locke's understanding of matter as being something "I know not what" with this argument that "we cannot even imagine an unperceived physical object."[60] They argue, "To try to imagine anything is to entertain certain qualities of the thing, but by definition Lockean substance itself has no qualities but lies beneath them. So Berkeley concludes that the very notion of material substance is 'repugnant.'"[61] These two authors outline Berkeley's argument in the following form: "1. Physical objects are nothing but collections of perceivable qualities. 2. Perceivable qualities are essentially ideas. 3. Ideas are mind-dependent—they exist only when perceived. 4. Therefore, physical objects exist only when perceived."[62] They argue that this argument is in a valid form and they agree with Berkeley that "sense experience discloses to us nothing in any physical object beyond its color, texture, shape, taste, odor, and so on. Moreover, the perceiver relativity of such things as size, density, temperature, sweetness, and other qualities further reinforces the premise."[63] They also clarify that for Berkeley and many philosophers, the term "idea," "encompasses sensory impressions, bodily sensations, and mental images. Thus understood, perceivable qualities clearly fall under the category of 'ideas.'"[64] Berkeley has made several persuasive arguments that there are no such things as mind-independent objects, but what is it that provides the harmony whereby all people experience

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[59] Matthew J. Densley, "The Fundamental View of Idealism," *Linguistic And Philosophical Investigations* 7 (January 2008), 126.

[60] Cowan and Spiegel, 2.

[61] Ibid.

[62] Ibid., 2-3.

[63] Ibid., 3.

[64] Ibid.

similar things?

Berkeley has shown that sensible things cannot exist outside of a mind or spirit and thus concludes that sensible things have no real existence (i.e., they do not exist on their own).[65] Since there is a consistency and law like nature surrounding this sensible world, it then makes sense that an infinite mind must be orchestrating it all. Berkeley states, "As sure as the sensible world really exists, therefore, so sure is there an infinite, omnipresent Spirit who contains and supports it."[66] From this Berkeley makes the following argument for God's existence: 1. Sensible things exist. 2. If sensible things exist, they must be perceived by an infinite mind. 3. Therefore, there is an infinite mind, or God.[67] Another argument is found in the *Dialogues*, where Berkeley declares that "there are only perceiving things and perceived things; or that every unthinking being is necessarily—from the very nature of its existence—perceived by some mind, if not by any finite created mind then certainly by the infinite mind of God, in whom 'we live, and move, and have our being.'"[68] As Cowan and Spiegel explain, "The only true substances are spirits, and these come in two forms: infinite and finite. The infinite spirit is God, the source of all else that exists. And finite spirits include humans, angels, and whatever other finite, perceiving minds God has made."[69] God's mind is like the capstone of Berkeley's system. It is what provides the stability and order of everything in his world. As Dunham, Grant, and Watson state, "It is God's will that these ideas should appear in the individual mind as they do. God determines that they should appear constantly, and consistently, in certain orders and with certain connections. It is this order

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[65] Berkeley, *Dialogues*, 29.

[66] Ibid.

[67] Ibid., 30.

[68] Ibid., 46.

[69] Cowan and Spiegel, 3-4.

and connection that we call nature."[70] Or as John Foster explains it in his system:

> [T]he world is something whose existence is constitutively sustained by three factors: first, the sensory organization, which disposes sensory experience to conform to its world-suggestive pattern; second, the relevant endowments of the human mind, which make us empirically receptive to the orderly character of our sensory experiences, and thereby enable the sensory organization to dispose things to appear systematically worldwise at our empirical viewpoint; third, the ordaining role of God, which provides the right kind of objective underpinning for the way in which things are disposed to empirically appear.[71]

Berkeley's notion that everything in the world is made of the same substance, "mind," and is a collection of sensible properties emerging from God, is altogether simpler than a dualistic explanation.

Simplicity has long been considered a theoretical virtue in philosophy.[72] The philosophical argument for simplicity is stated well through Occam's razor: "Don't multiply entities beyond necessity." This belief that simpler theories are preferred over more complicated ones is something any philosophical system should strive for. Two common aspects of simplicity are elegance and parsimony. The former is known as syntactic simplicity and deals with the number and complexity of hypotheses. The later is known as ontological simplicity and deals with the number and complexity of things postulated.[73] Leibniz, Berkeley, and Kant all hold to this principle. According to the *Stanford Encyclopedia of Philosophy*, Kant "supports the maxim that 'rudiments or principles must not be unnecessarily multiplied (*entia praeter necessitatem non esse multiplicanda*)' and argues that this is a regulative idea of pure reason which underlies

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[70] Dunham, Grant, and Watson, 83.

[71] John Foster, *A World for Us: The Case for Phenomenalistic Idealism* (New York: Oxford University Press, 2008), 243.

[72] Alan Baker, "Simplicity," *The Stanford Encyclopedia of Philosophy* ed. Edward N. Zalta (Fall 2013 Edition), accessed April 11, 2016, http://plato.stanford.edu/archives/fall2013/entries/simplicity.

[73] Ibid.

scientists' theorizing about nature."[74] When applied to metaphysical systems, this principle of pure reason seems to favor the monistic philosophies. So, Occam's razor provides support in favor of idealism at least when compared to dualism, since idealism has fewer hypotheses and things postulated. Idealism is simpler because it only has one substance and thus there is no interaction problem. In his *Discourse on Metaphysics*, Leibniz says the following regarding the simplicity of his view:

> Admittedly, whatever God does costs him nothing even less than it costs a philosopher or scientist to invent theories out of which to build his imaginary world, for God can bring a real world into existence merely by decreeing it. But in the exercise of wisdom by God or a scientist there is something analogous to the cost of a building, namely the number of independent decrees or theories that are involved. For God's creative activity to be economical is for it to involve very few separate decrees; for a scientific theory to be economical in its means is for it to have very few basic principles or axioms. Reason requires that multiplicity of hypotheses or principles be avoided, rather as the simplest system is always preferred in astronomy.[75]

Leibniz essentially argues that just as it costs a philosopher nothing to come up with ideas, so too it costs God nothing to come up with the world. The mere thought of bringing about a world is enough for God to manifest one. He does not need to first make a separate substance before He can create a world. Berkeley argues the same point in the *Dialogues* when he says: "How can you suppose that an all-perfect Spirit, on whose will all things absolutely and immediately depend, would need an instrument in his operations, or that he would use one if he didn't need it? Thus, it seems to me, you have to admit that it would be incompatible with the infinite perfection of God for him to use a lifeless inactive instrument such as matter is supposed to be."[76] It certainly seems possible that an omnipotent God would not need a substance other than mind to

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[74] Alan Baker, "Simplicity," *The Stanford Encyclopedia of Philosophy* ed. Edward N. Zalta (Fall 2013 Edition), accessed April 11, 2016, http://plato.stanford.edu/archives/fall2013/entries/simplicity.

[75] Leibniz, *Discourse*, 3.

[76] Berkeley, *Dialogues*, 34.

manifest a world for His creation. If a separate substance were not needed, then why would God use one? Having a metaphysical system entirely of one substance is the most elegant and parsimonious theory. God is able to provide the tangible world for his creatures most directly in a monistic system. Dunham, Grant, and Watson explain, "God has no need of matter as an instrument for implanting his ideas into our minds. He can do it directly, without any pointless mediation. The rules of the 'exhibition' of things to us are the 'laws of nature' determined by God."[77] Foster argues that "if God does not need to employ a causal intermediary in order to be able to control and organize our sensory experiences in the requisite way, it seems, at the face of it, odd if he should choose to do so, rather than take the ontologically simpler course of controlling and organizing them directly."[78] Foster clarifies that it would not be any extra effort on the part of God to implement this more complex creation, but "granted that God can achieve his purposes for human experience without a mechanistic intermediary, it would seem pointlessly cumbersome for him to introduce one; and we can surely be confident that a perfectly rational God would not gratuitously add to the realm of reality in that way."[79] Cowan and Spiegel also believe, "given the existence of God, the supposition of a material substratum is not necessary. Why theorize about an unknown, unthinking stuff supporting the perceivable qualities we experience when an all-knowing, all-powerful deity is more than sufficient to account for this?"[80] A helpful analogy for understanding how God can make a tangible world with only the substance of mind would be dreams.

Every night people experience tangible realities in their dreams, yet one would not say

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[77] Dunham, Grant, and Watson, 84.

[78] Foster, 232.

[79] Ibid.

[80] Cowan and Spiegel, 2.

that the physical material they experience in dreams is independent of mind. For certainly dreams take place in the mind and there is no actual physical substance in the mind. Yet people experience all five senses in dreams with clarity and a firm sense of realness. The things people experience in dreams are some of the following but not limited to: taste, smell, touch, sound, sight, pain, tangibility, fear, long durations of time, and communications with others. The dream world seems to incorporate everything that reality does, yet one would not say that the dream world contains matter, since dreams exist completely in the mind. Since the mind is capable of producing a tangible reality in the dream world, then how much more so would God's mind be capable of creating a tangible reality for His creation? God's infinite mind would certainly be capable of creating an entire reality that people can live in without actually needing to create the separate substance of matter. The reality that people experience in this world is tangible in the Berkeleyan sense alluded to earlier of being sensible. This sensibility that God provides for people creates a tangible world for them to experience much like people's minds provide them within the dream world. It can also be seen how God's infinite mind and creation would have natural laws that govern this reality stemming from His nature. In a dream world it is left to the human's imagination to create what he or she sees and experiences, and it can be surprising how detailed a dream can be, given humans' finite minds. Thus, it would make sense for the fine details of this existence, as discovered in science, to exist in God's mind since He would have thought of exactly how this world would function under His laws for it. Thus, perhaps this existence is something similar to a sensible or tangible holographic universe provided by God, in which matter does not exist as a separate substance, but instead there is the sensible that we experience as matter. If reality is actually like this, unbeknownst to the majority of people, then this discovery will truly be similar to the Copernican revolution, as Kant claimed with his

transcendental idealism.

Immanuel Kant

Kant argued that his explanation of how the world operates would drastically change the way people think. The revolution he was proposing is just as significant as when Copernicus realized that the stars were not orbiting around the observer, but rather the Earth was the body circulating. In his *Critique of Pure Reason*, Kant suggests, "[I]n metaphysics we can try the same idea as applied to the intuition of objects. If our intuition has to conform to the constitution of the objects, I don't see how we can know anything about them *a priori*; but I can easily conceive of having *a priori* knowledge of objects if they (as objects of the senses) have to conform to the constitution of our faculty of intuition."[81] Kant clarifies that the above is the first part of his Copernican revolution and that the second half is:

> If the intuitions I have been talking about are to constitute knowledge of anything, there must be more here than just intuitions; I'll have to take them to be representations of something that is their object—i.e. what they are intuitions of —and my conclusions about what the object is like must come through those representations. Any beliefs I reach about what an object is like will involve me in using concepts of it.[82]

It can be seen how this theme of relativity from the perspective of the observer has been in most of the idealistic teachings and is right here in Kant's work as well. He provides the example that if one were to think of something as solid, one has to project one's concept of solidity on it.[83] Kant also argues that space and time are better understood as filters through which people perceive. Redding summarizes this transcendental ideality thesis of space and time in the following way: "What we experience as the basic features of space (its tri-dimensionality) and of

[81] Immanuel Kant, *The Critique of Pure Reason*, trans. Jonathan Bennett, 9, last modified May 2007, accessed April 24, 2016, http://www.earlymoderntexts.com/assets/pdfs/kant1781part1.pdf.

[82] Ibid., 10.

[83] Ibid.

time (its 'one-way' directionality from past to future) are *not* features of what space and time are like 'in themselves,' but rather result from the way that the mind 'represents' objects and events in its experience."[84] Now, Kant should not be misinterpreted to mean that the observer creates his or her own reality. Redding makes this clear in the following:

> While Aristotle seemed to consider the categories as telling us something about things (primary substances) "in themselves," from Kant's reversed *Copernican* point of view, these categories reflect the logical structure of our cognition of things— their fundamental *conceptual form*. That is, while Aristotle thinks our talk and thought realistically reflect the form objects actually have, Kant thinks of the form as projected onto the objects in our judging them…. [M]uch of what Kant calls the Transcendental Analytic is concerned with this reversal of Aristotle's approach to the categories. The basic idea seems to be that we bring the categorical structure of the understanding to the objects we perceive in the same way as we do the "pure intuitions" of space and time to those objects. The focus here is on the form of objects we encounter and make judgments about in perceptual experience.[85]

Copleston also makes this clarification as he explains, "To put the matter crudely, we no more create things according to their ontological existence than the man who wears red-tinted spectacles creates the things which he sees. If we assume that the spectacles can never be detached… the man will never see things except as red, and their appearance will be due to a factor in the perceiving subject."[86] Rather than people creating their own reality, it is God who creates the world and people who perceive it through their senses. According to Copleston, the divine intellect is both intuitive and archetypal.[87] He explains that "the divine intuition creates its objects. But this is not the case with human intuition, which presupposes an object. And this means that the human subject must be affected by the object in some way. Now, the capacity for

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[84] Redding, 36.

[85] Ibid., 63.

[86] Frederick Charles Copleston, *A History of Philosophy,* vol. 6*, Modern Philosophy: From the French Enlightenment to Kant* (New York: Image Books, 1994), 210.

[87] Ibid., 235.

receiving the representations (*Vorstellungen*) of objects by being affected by them is named 'sensibility' (*Sinnlichkeit*)."[88] Kant believed that one perceives objects through sensibility, but that one cannot know the object directly.

Densley explains, "[W]hile nothing can be known of the thing-in-itself, the elusive reality beyond the subjective conditions of experience, this should not be taken to deride the knowledge of 'mere phenomena' that we gain through experience. Kant's philosophy involves a rejection of the separation of the world as it is from our experience of it."[89] Kant argues that appearances and objects are not separate; rather they can only be understood as in relation to one another. Densley reports that the world is necessarily capable of being experienced by people, but they can only describe appearances if they are of an objective world.[90] Haldar identifies the following six stages in the development of Kant's concept of the thing-in-itself:

> First, it comes before us as the unknown cause of our sensuous affections. Then it is the unnavigated ocean that bounds the island of the world of experience. Next, it is the regulative idea which imparts unity to our experience. Next, it is the analogue of the unity of self-consciousness. Next, it is the unconditioned background of sensible phenomena and the sum total of the intelligible causes to which series of changes are referred. And, finally, it is the *ens realissimum*, the perceptive understanding "that thinks in intuitive ideas in some such way as the creative genius thinks in images." The "thing-in-itself," in its ultimate development, is no other than God who, in the words of Paulsen, "is the primeval cause of the possibility of all being, out of which that of every entity must be regarded as derived by limitation; so that there is no entity which would not be posited in God's being."[91]

Haldar also argues that Kant's system is a combination of Plato and Leibniz's philosophy. Furthermore, he contends that Kant never rejected any of the ideas that he would have seen in the Baumgarten textbook, such as the following explanation of reality: "[I]n contradistinction to

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[88] Copleston, *From the French Enlightenment to Kant*, 235.

[89] Densley, 122.

[90] Ibid.

[91] Haldar, 387.

sensibility, is a system of monads which are joined in a unity by means of pre-established harmony or an *influxus idealis*, like that which exists between the parts of a construction of thought or a poem. The ultimate ground of the unity of things is their radical unity in God's being, while bodies, on the contrary, are merely phenomena substantiate."[92] Kant did reject Leibniz's pre-established harmony,[93] but he certainly believed that the unity of things is grounded in God. Kant also agreed with Leibniz's argument that matter cannot be the metaphysical foundation of reality because matter is composed of smaller and smaller parts.

Kant makes a similar argument to that of Leibniz's in his Inaugural Dissertation. He challenges his readers:

> Start with something x that is substantial and composite, and analyse it into its simpler elements; this process doesn't come to an end until we reach a part that is not a whole made up of simpler parts, i.e. until we reach something simple. The opposite process of synthesising—combining x with other substances—doesn't come to an end until we reach something that isn't a part of anything bigger, i.e. until we reach a world.[94]

This is where one can see Kant searching for the true metaphysical foundation of the world. He also argues that the aim of reason is not to disregard the phenomena one experiences in deference to that which precedes them in an endless chain of causation or a whole of interconnected parts. Instead, reason should prompt one to trace the whole system of things all the way to an ultimate principle.[95] Haldar explains why this should be the aim of reason:

> The reason for this demand of reason is to be found in what, according to Kant, are the necessary conditions of experience itself. The purely analytical unity of the self makes experience possible by introducing its own unity into the differences of sense, and in doing so becomes synthetic. By means of its synthetic activity it constitutes the objective

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[92] Haldar, 388.

[93] Redding, 37.

[94] Immanuel Kant, *The Form and Principles of the Sensible and Intelligible World*, trans. Jonathan Bennett, 1, last modified May 2012, accessed April 24, 2016, http://www.earlymoderntexts.com/assets/pdfs/kant1770.pdf.

[95] Haldar, 382.

> world in distinction from which it becomes conscious of itself as a unity. In this way, however, it so to speak loses the purity of its nature, viz., its undifferentiated unity with itself. To realize such a unity, therefore, becomes its ideal.[96]

The second Idea of Reason that this gives rise to, Haldar explains, is the conception of the world as an unconditioned whole. This is so because although unity had been introduced to the sense, its difference could not be completely overcome. Thirdly, the unity of the self vis-à-vis the world advocates a complete reconciled unity.[97] Thus, Haldar says that the three Ideas of Reason "arise from the very nature of human knowledge. As Kant says, 'There is in the progression from our knowledge of ourselves (the soul) to a knowledge of the world and through it to a knowledge of the Supreme Being something so natural that it looks like the logical progression of reason from premises to conclusion.'"[98] Thus, there is another direct connection to God in Kant, at least in how he understands the origin and nature of reason. The intentions Kant has for his system seem to have been in the right direction, but his system is certainly not flawless.

Critique of Kant

Kant left such a strong legacy with his Copernican revolution that any major idealists (or philosopher in general) seems to have to at least respond to his system. As Dunham, Grant, and Watson explain:

> Whole generations had struggled and failed to provide a convincing philosophical account of how subject and object could be connected. How could there be a relation between the physical world and knowledge of the physical world in the (non-physical) mind? Kant thought he had solved the problem by making the world of empirical objects a "construct" of the human cognitive apparatus. There was no problem of linkage between the object and the subject, because the object was, he said, simply a construction of the cognitive "faculties" of "rational" subjects. All that "objectivity"

[96] Haldar, 382.

[97] Ibid.

[98] Ibid.

> means to a Kantian is that we share an "object" world by virtue of the cognitive similarities that we share as "rational beings." As we have seen, this created all kinds of new problems. The idealists who followed Kant were acutely aware of these. Their solution was, in a sense, the reverse of Kant's. They insisted, like Spinoza, that there can only be one substance, and that the material and the mental must both be manifestations of a single more fundamental substance. This single substance, said Hegel, is the Idea. Both matter and mind are functional attributes of the unfolding of the total system that is the Idea.[99]

Hegel was another famous idealist that came on the scene shortly after Kant. Hegel argued that there is only one substance, the Idea (or consciousness or spirit). In fact, his system points so strongly in this direction that many have labeled him a pantheist or panentheist. However, he does provide a few insights in his critique of Kant. According to Dunham, Grant, and Watson, "Hegel argues that Kant's concept of knowing, which hinges on the unity of the subject, cannot be a knowing because it is contradictory: it is not a knowing of what is (reality), but a knowing of what cannot be known (the thing-in-itself)."[100] This idea in Kant's system of the thing-in-itself being separate from the knowing subject is one of the main flaws in his system according to Hegel and others. Sally Sedgwick explains that Hegel believed Kant does not entertain the possibility that rather than "'absolutely separate,' 'the moment of the atom is contained in continuity itself.' Kant does not consider this possibility, Hegel suggests in the *Enclyopaedia Logic*, because of his more general failure to appreciate that 'antinomy finds itself… in all objects of all kinds, in all representations, concepts and ideas'" [101] Thus, Sedgwick argues, "In taking for granted that the concepts of discreteness and continuity must be understood as 'absolutely separate,' Kant thus reveals his commitment to 'finite categories.'"[102] Although

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[99] Dunham, Grant, and Watson, 156.

[100] Ibid., 260.

[101] Sally Sedgwick, *Hegel's Critique of Kant: From Dichotomy to Identity* (Oxford: Oxford University Press: 2012), 174.

[102] Ibid.

Hegel's dialectical system may lead to panentheism the way that he lays it out, it does hold a resolution to the mind-body problem. Dunham, Grant, and Watson explain, "Hegel solves the problem of the duality of mind and body by making them both manifestations of the Idea itself."[103] According to Haldar, the central idea of Hegel's philosophy is "the conception of the ultimate reality as a system of minds in which an all-inclusive spiritual principle is realized."[104] This universality in Hegel's philosophy seems to be a strong point because it unites everything into a monistic system that is connected to God. Kant's system seems flawed in the sense that it separates the thing-in-itself from the perceiver. The importance of a unitary system will be examined more in the next chapter.

Heisenberg also offers a critique of Kant's philosophy, specifically against his causal law. He explains that Grete Hermann and Carl Friedrich von Weizsacker engaged in a discussion with him on this topic. Hermann tried to argue that Kant's causal law was "unshakable."[105] In response to this, Heisenberg used the illustration of a single atom of Radium B to explain that "we cannot—and this is where the causal law breaks down—explain why a particular atom will decay at one moment and not at the next, or what causes it to emit an electron in precisely this direction rather than that. And we are convinced, for a variety of reasons, that no such cause exists."[106] Hermann reasoned that the cause must simply be undiscovered and that they should keep searching for it. However, Heisenberg replied, "No, we think that we have found all there is to be found in this field… for from other experiments with Radium B we know that there are no

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[103] Dunham, Grant, and Watson, 157.

[104] Haldar, 388.

[105] Werner Heisenberg, *Physics and Beyond; Encounters and Conversations* (New York: Harper & Row, 1971), 118.

[106] Ibid., 119.

determinants beyond those we have established. Let me put it more precisely: we have just said that it is impossible to tell in which direction an electron will be emitted, and you tell us to keep looking for further factors."[107] Heisenberg goes on to explain several other difficulties that would arise even if such factors could be found. However, Friedrich joined the discussion by saying that "[t]he apparent contradiction … probably arises because we behave as if a Radium B atom were a 'thing-in-itself,' a Kantian '*Ding an sich*.' But this is by no means self-evident or correct. Even Kant treated the '*Ding an sich*' as a problematical concept."[108] He went on to explain, "In atomic physics we have learned that observations can no longer be correlated or arranged on the model of the '*Ding an sich*.' Hence there is also no 'Radium B atom in itself.'"[109] Furthermore, Friedrich claimed, "In quantum theory we have to use a new method of objectifying perceptions, one that Kant would never have dreamt of in his philosophy. Every perception refers to an observational situation that must be specified if experience is to result. The consequence of a perception can no longer be objectified in the manner of classical physics."[110] Heisenberg similarly argued, "Kant could not possibly have foreseen that in an experimental realm so far beyond daily experience we could no longer treat observations as if they referred to '*Ding an sich*' or 'objects;' in other words, he could not foresee that atoms are neither things nor objects."[111] Hermann then probed Heisenberg for an explanation as to what atoms are, to which he replied, "We lack the right term, for our language is based on daily experience, and atoms are not. But… we might say that atoms are parts of observational situations, parts that have a high

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[107] Heisenberg, *Physics and Beyond*, 119.

[108] Ibid., 120.

[109] Ibid.

[110] Ibid., 121.

[111] Ibid., 123.

explanatory value in the physical analysis of the phenomena involved."[112] The next chapter will examine such phenomena in more detail.

[112] Heisenberg, *Physics and Beyond*, 123.

Chapter 3

Support from Quantum Physics and Psychology

Quantum physics (or mechanics) has tremendously affected the philosophical and scientific understanding of reality since its discovery in the past century. There have been many interesting discoveries and experiments made at the quantum level, resulting in several different interpretations. The role of consciousness in quantum physics has seriously challenged the materialistic view that scientists so desperately want to hang onto. Daniel Dennett, author of *Consciousness Explained*, is one of the many leading proponents of materialism and is in agreement with the majority of scientists and philosophers who believe that consciousness can still be explained in materialistic terms even in light of quantum physics. One of Dennett's reasons for rejecting dualism is that it violates the principle of conservation of energy—that any change in the trajectory of a particle is an acceleration requiring the expenditure of energy. Henry Stapp, who received his Ph.D. in particle physics and went on to study directly under Wolfgang Pauli and later Heisenberg, disagrees with Dennett. Stapp explains that Dennett's argument "collapses when one goes over to contemporary physics, in which, due to the Heisenberg uncertainty principle, trajectories of particles are replaced by cloud-like structures, and in which conscious choices can influence physically described activity without violating the conservation laws or any other laws of quantum physics."[113] Thus, Stapp argues, "*Contemporary physical theory allows, and its orthodox von Neumann form entails, an interactive dualism that is fully in accord with all the laws of physics.*"[114] This chapter will elaborate on these ideas and

[113] Henry Stapp, *Mindful Universe: Quantum Mechanics and the Participating Observer* (Berlin: Springer, 2011), 81.

[114] Ibid.

show how quantum physics is supportive of consciousness being a real and independent substance (i.e. not material in nature). Now, Stapp will label his view as dualistic; however, it seems to be more idealistic in a philosophical sense. For instance, he says, "Descartes' identification of two different 'substances' in one reality is neither helpful for nor concordant with quantum theory. However, the conception of two differently described *aspects* of reality accords with both the theoretical and practical elements of quantum theory."[115] He clarifies his view by saying that "both sides of the quantum duality are conceptually more like 'ideas' than like 'rocks.'"[116] The descriptions Stapp gives of this "duality" seem to be more in line with monistic idealism. Of course there is a duality that everyone experiences of mind and matter. However, these should be considered more as different aspects of reality, rather than two separate substances. Heisenberg also supports this principle. In an interview with Heisenberg, Ruth Nanda Anshen posed the following question to him: "You have always emphasized, Dr. Heisenberg… that when you speak of waves or particles you do not refer to a dualistic description of the phenomena but rather to an absolutely unitary one. Am I correct in thus interpreting your meaning as far as I understand it? 'Yes,' answered Heisenberg."[117] Furthermore, Jeffery Schwartz, M.D., who has shown that the mind can influence the brain through his work with obsessive-compulsive disorder (OCD) patients and the co-author of *The Mind and the Brain: Neuroplasticity and the Power of Mental Force*, argues similarly to Stapp by saying that "the view of reality demanded by quantum physics challenged the validity of the Cartesian separation of mind and material world, for in the quantum universe 'there is no radical separation

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[115] Stapp, 104.

[116] Ibid., 182.

[117] Ruth Nanda Anshen, *Biography of an Idea* (Mt. Kisco, N.Y.: Moyer Bell, 1986), 168.

between mind and world.'"[118] These are the very same ideas that monistic idealism is arguing for. Schwartz mentions that "Wolfgang Pauli stated in a letter to Niels Bohr in 1955, 'In quantum mechanics… an observation here and now changes in general the 'state' of the observed system…. I consider the unpredictable change of the state by a single observation… to be an abandonment of the idea of the isolation of the observer from the course of physical events outside himself.'"[119] Thus, some of the very founders of quantum physics were having some of the same realizations about reality through science that philosophers such as Leibniz, Berkeley, and Kant were having through philosophy hundreds of years prior. They both tend to begin with the basic idea that Cartesian dualism fails. Schwartz states, "This is the textbook position on quantum mechanics and the nature of reality: that the Cartesian separation of mind and matter into two intrinsically different 'substances' is false."[120] This separation of reality into two separate substances causes many problems in metaphysics, such as the mind-body problem.

Schwartz points out, "The very origin of the mind-brain problem lies in a physics that has been outdated for almost a century."[121] He goes on to argue that if this problem has "resisted resolution for three centuries, it is because the physical theory that scientists and philosophers have wielded is fundamentally incorrect. If we are foundering in our attempts to resolve the mind-matter problem, the fault lies with the physics more than with the philosophy or the neuroscience." [122] He elaborates that "we are not doing all that badly in our efforts to understand

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[118] Jeffrey M. Schwartz and Sharon Begley, *The Mind and the Brain*: *Neuroplasticity and the Power of Mental Force* (New York: Harper Perennial, 2002), 287.

[119] Ibid., 287.

[120] Ibid.

[121] Ibid., 261.

[122] Ibid., 288.

the mind side of the equation; it's our understanding of the role of matter that is seriously off."[123] The classical Newtonian physics has been replaced with quantum physics and this updated understanding of the universe has consciousness as a key factor that is no longer being denied as simply a phenomenon of the brain. Some of the discoveries in quantum physics are pointing towards an idealistic understanding of reality. For example, Schwartz says that quantum physics "describes a world that often seems to have parted company with common sense, a world at odds with some of our strongest intuitive notions about how things work. In the quantum world, subatomic particles have no definite position until they are measured: the electron orbiting the nucleus of an atom is not the pointlike particle we usually imagine."[124] This parting from the typical common sense notions that one has about reality echoes the very thoughts of Berkeley. Schwartz declares that the advances "in physics have occurred when scientists united two seemingly disparate entities into a coherent, logical whole. Newton connected celestial motions with terrestrial motion. Maxwell unified light and electromagnetism. Einstein did it for space and time. Quantum theory makes exactly this kind of connection, between the objective physical world and subjective experiences."[125] Idealist thinkers have been trying to unite the physical world with subjective experiences for centuries; have they finally found support in science?

Quantum physics certainly seems to be supportive of these ideas. However, there are many different interpretations of quantum physics. Schwartz explains,

> During a period of feverishly intense creativity in the 1920s, the greatest minds in physics, from Paul Dirac and Niels Bohr to Albert Einstein and Werner Heisenberg, struggled to explain the results of quantum experiments. Finally, at the fifth Solvay Congress of physics in Brussels 1927, one group—Bohr, Max Born, Paul Dirac, Werner Heisenberg,

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[123] Schwartz and Begley, 288.

[124] Ibid., 263.

[125] Ibid., 289.

> and Wolfgang Pauli—described an accord that would become known as the Copenhagen Interpretation of quantum mechanics.[126]

This has been the leading interpretation of quantum physics and this chapter will stay in agreement with it. Does this interpretation of quantum physics support a general theory of idealism? Amit Goswami, Ph.D. in Theoretical Nuclear Physics from the University of Calcutta, who served as a Physics professor at the University of Oregon from 1968-1997, argues that it does in his article, "The Idealistic Interpretation of Quantum Mechanics." The support is best seen in the following three aspects of quantum physics that will be examined: the implications of the Copenhagen interpretation, the role of a conscious observer in the collapse of the wave function, and the connections seen in the Einstein-Podolsky-Rosen paradox showing the nonlocality (transcendental-ness) of quantum physics.

The Copenhagen Interpretation

Stephen Palmquist, author of the article "Kantian Causality and Quantum Quarks: The Compatibility between Quantum Mechanics and Kant's Phenomenal World," reminds people that the Copenhagen interpretation is the most widely accepted interpretation of quantum physics and emerged from discussions held in Copenhagen between Niels Bohr and Werner Heisenberg in 1926-27.[127] Palmquist explains that the different interpretations of quantum physics can be categorized by their answers to the following two questions: "(A) Is the quantum world characterized by randomness (i.e. indeterminacy)? And (B) Is the quantum world characterized by nonlocality (i.e., action at a distance)?"[128] He argues that the Copenhagen interpretation

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[126] Schwartz and Begley, 272.

[127] Stephen R. Palmquist, "Kantian Causality and Quantum Quarks: The Compatibility between Quantum Mechanics and Kant's Phenomenal World," *Theoria* 28, no. 2 (May 2013): 289-290.

[128] Ibid., 290.

"accepts both randomness and nonlocality. It reconciles these by means of the 'projection postulate,' whereby the act of measurement (i.e., 'observation') randomly projects a particle's original state onto a new 'eigenstate.'"[129] Particles, as will be seen throughout this chapter, are best understood as waves or clouds of possibilities rather than material particles. Measuring a particle (determining one of its observables) projects it onto an eigenstate, which is in a sense a more reduced wave of possibilities since one of the observables is known but not the others. Goswami explains, "In consciousness coherent superpositions are transcendent objects. The subject to consciousness chooses one of the facets of the multifaceted coherent superposition when it brings it down to immanence by conscious observation, subject of course to the probability constraints of the quantum calculus."[130] Palmquist makes a parallel between Kant's theory of reality and quantum physics. The parallel is that in Kant's theory, it is not the object that affects the observer, but the observer that affects the object. Also, similar to how Kant theorized that one cannot know anything about the noumenal world, so too can one not know much about the quantum world (uncertainty principle).[131] Thus, already there seems to be support from quantum physics for idealism in the Kantian transcendental sense.

To say that quantum physics supports idealism is a powerful claim that needs to be well supported. Thus, a proper understanding of quantum physics is essential. Stapp provides the following explanation for what "orthodox quantum theory" is:

> [V]ersions of quantum theory (such as the original pragmatic Copenhagen interpretation, validated by actual scientific practice, and also von Neumann's extension of it) … that explicitly recognize the fact that, *prior to the appearance of an experimental outcome*, a particular experiment needs to be set up. This "setting up" *partitions* a

[129] Palmquist, 290.

[130] Amit Goswami, "The Idealistic Interpretation of Quantum Mechanics," *Physics Essays* 2, no. 4 (1989): 389.

[131] Palmquist, 290.

> continuum of quantum potentialities into a finite set of discrete possibilities. A simple example of such a partitioning is the placing of a detector of some particular size and shape in some particular location. The distinction between the firing and non-firing of this detector during some specified temporal interval then induces a bifurcation of a continuous space of potentialities into two subspaces, each correlated with a distinctive event, or lack thereof.
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> Von Neumann referred to this essential physical act of portioning as "process 1" and represented it in terms of projections onto different subspaces. Quantum theory depends upon the injection of such process 1 *interventions* into the dynamical evolution of the state of the system under study, which, except at the moments of these interventions, is controlled by the Schrödinger equation (which von Neumann called "process 2"). An adequate theory of nature must accommodate physical process 1 actions even in situations in which no human agent seems to be involved. These interventions into the physical dynamics are perhaps the most radical innovation of quantum theory, vis-à-vis classical physics.[132]

This chapter will stay within the realm of orthodox quantum theory and the ideology of the Copenhagen interpretation. Metaphysical and ontological implications of these theories will be discussed. For instance, Stapp explains that in quantum theory "actual occasions actualize what was antecedently merely potential, but both the potential and the actual are *real* in an ontological sense. A key feature of actual occasions is that they are conceived as 'becomings' rather than 'beings'—they are not substances such as Descartes' res extensa and res cogitans, or material and mental states: they are processes."[133] He further explains the important ontological characteristic of the "'physical' aspect of quantum theory, namely the part described in terms of a wave function or quantum state, is that of a 'potentia' or 'tendency' for an event to happen. Tendencies for events to happen are not substance-like: they are not static or persisting in time."[134] Stapp further explains, "When a detection event happens in one region, the objective tendency for such an event to occur elsewhere changes abruptly. Such behavior does not conform to the

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[132] Stapp, 101-102.

[133] Ibid., 103.

[134] Ibid., 103-104.

philosophical conception of a substance."[135] Rather than using quantum theory for just mathematics like many physicists do, it is important to explore the philosophical implications of the theory. Stapp explains:

> In order to have a useful scientific theory one needs to link the mathematics to the perceptual aspects of our experience. The mathematical structure of quantum theory is such that the classical materialist accounts of the physical aspects of nature simply do not work. To achieve a conceptualization that ties the new mathematics to actual empirical scientific practice, in a rationally coherent and practically useful way, the founders of quantum theory switched to a conceptualization of the physical world based upon empirical events, such as the click of a Geiger counter, and upon potentialities for such events to occur. The mathematics thereby becomes linked to empirical phenomena within the theory itself.[136]

This demonstrates why it is important to study the science and philosophy side by side.

Goswami outlines several main principal elements of the Copenhagen interpretation that Bohr, the father of the Copenhagen interpretation, had in mind. One of these elements is that "[q]uantum objects are governed by the Heisenberg uncertainty principle – that it is impossible to simultaneously measure pairs of conjugate variables such as position and momentum."[137] Another of these elements is the complementarity principle of Bohr, which states that quantum objects have a complementary wave-particle duality.[138] Goswami provides another element of the Copenhagen interpretation with this summary: "Discontinuity and quantum jumps are fundamental aspects of the behavior of quantum systems. For example, a measurement leads to a discontinuous collapse of the state function of a system from a coherent superposition to an eigenstate of the observable being measured."[139] Another element is "inseparability," which

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[135] Stapp, 104.

[136] Ibid., 108-109.

[137] Goswami, "Idealistic Interpretation," 387.

[138] Ibid.

[139] Ibid.

states that quantum systems cannot coherently be separated from their measuring apparatuses.[140] Bohr also provides the complementarity principle, which states that the wave and particle aspects "of a quantum object are complementary; yet for a single quantum object, the wave nature never manifests; whenever we look we always 'see' a quantum object localized, as a particle. This opens the door to a transcendental interpretation of complementarity – the wave aspect of a quantum object is transcendent; it exists in another domain transcending space-time."[141] Nonlocality is another key element in the Copenhagen interpretation. This element, examined in more detail later, seems to show that the fundamental element of nature lies outside of space-time yet creates events within space-time. Thus, nonlocal refers to a transcendental state of being outside space-time.[142] Goswami will couple the Copenhagen interpretation with an idealistic philosophy similar to Plato and Kant, in which a realm of consciousness is the source of reality. He explains that in this view, quantum objects are "posited to be 'archetypal,' *a priori*; they exist in potentia (to use Heisenberg's term) in this transcendent domain until translated to the manifest world of appearance by the discontinuous act of measurement. And the EPR [Einstein-Podolsky-Rosen] nonlocal connection between quantum objects is seen as a connection via the transcendent domain of consciousness."[143] Goswami will label his view

> *monistic idealism*, which considers consciousness to be the primary reality. The world of matter is considered to be determined by consciousness as is the subtle world of mental phenomena, such as thought. Besides the material and the subtle (which together form the immanent reality or the world of appearance), idealism posits a transcendent archetypal or ideal realm as the "source" of the lower immanent worlds of appearance of the material and the subtle. However, monistic idealism is fundamentally a monistic philosophy; any subdivisions such as the three orders above are *in* consciousness – thus,

[140] Goswami, "Idealistic Interpretation," 387.

[141] Ibid.

[142] Ibid.

[143] Ibid., 388.

ultimately, consciousness is the only *reality*.[144]

Goswami relates this view to the Allegory of the Cave by Plato. He explains that the shadows in this allegory represent the world of appearance, the archetypes represent the transcendent world of forms, but in reality light is the real truth and the only thing that everyone really sees. Thus, consciousness is like the light in the cave allegory.[145] This is similar to what Heisenberg says in his book, *Natural Law and the Structure of Matter*, when comparing the views of Plato and Democritus. Heisenberg argues, "[C]oncerning the structure of matter, Plato has come much nearer to the truth than Leukippos or Democritus, in spite of the enormous success of the concept of the atom in modern science."[146] He later states, "[M]odern physics has definitely decided in favor of Plato. In fact these smallest units of matter are not physical objects in the ordinary sense; they are forms, ideas which can be expressed unambiguously only in mathematical language."[147]

Heisenberg strongly believed that "[t]he Copenhagen interpretation of quantum theory has led the physicists far away from the simple materialistic views that prevailed in the natural science of the nineteenth century."[148] Heisenberg explained that the materialistic view was so grounded in the natural science and philosophical systems that it was so deep in the minds of even the common man and that is why many attempts have been made to criticize the Copenhagen interpretation and to replace it.[149] He provides the insight that all of the opponents

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[144] Goswami, "Idealistic Interpretation," 386.

[145] Ibid.

[146] Werner Heisenberg, *Natural Law and the Structure of Matter* (London: Rebel Press, 1970), 7.

[147] Ibid., 32-33.

[148] Werner Heisenberg, *Physics and Philosophy: The Revolution in Modern Science* (New York: Harper & Row, 1958), 128.

[149] Ibid.

of the Copenhagen interpretation would agree on one point: "It would, in their view, be desirable to return to the reality concept of classical physics or, to use a more general philosophic term, to the ontology of materialism. They would prefer to come back to the idea of an objective real world whose smallest parts exist objectively in the same sense as stones or trees exist, independently of whether or not we observe them."[150] However, Heisenberg argues that this would be "impossible or at least not entirely possible because of the nature of the atomic phenomena…. It cannot be our task to formulate wishes as to how the atomic phenomena should be; our task can only be to understand them."[151] He elucidates this idea by explaining that "[t]he ontology of materialism rested upon the illusion that the kind of existence, the direct 'actuality' of the world around us, can be extrapolated into the atomic range. This extrapolation is impossible, however."[152] J.N. Mohanty argues that the choice of a philosophical system should be guided by: "(a) if the scientific results are or are not inconsistent with the theory, and (b) by considerations/arguments/insights that are strictly philosophical rather than scientific."[153] He further argues that a "certain kind of idealistic philosophy… satisfies both these requirements. CI [Copenhagen interpretation], is a good reading of Quantum Mechanics, and an idealistic reading of CI, I will argue, satisfies (a), and also has the weight of independent philosophical arguments behind it."[154] One of the main elements of the Copenhagen interpretation that expresses the idealistic nature of reality is the role of the observer in the collapse of the wave function.

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[150] Heisenberg, *Physics and Philosophy*, 129.

[151] Ibid.

[152] Ibid., 145.

[153] J.N. Mohanty and Tara Chatterjea, *Lectures on Consciousness and Interpretation* (New Delhi: Oxford University Press, 2009), 100.

[154] Ibid., 100-101.

The Role of the Observer in the Collapse of the Wave Function

Stapp was interested in quantum physics as early as his high school days when he learned about the double-slit (or two-slit) experiment and he has been studying the mysteries ever since. Like most physicists, Stapp rejected the idea proposed by von Neumann that the mind has something to do with creating reality. However, he continued to study what exactly it was that changes all of the potentials from the Schrödinger wave function into a single reality.[155] Stapp explains that he "worked long and hard trying to figure out what led to the collapse of the wave function. In the end, I became convinced that conscious experience needed to be taken seriously."[156] Consciousness cannot be ignored for quantum physics to work. Wigner explains:

> When the province of physical theory was extended to encompass microscopic phenomena, through the creation of quantum mechanics, the concept of consciousness came to the fore again: it was not possible to formulate the laws of quantum mechanics without reference to the consciousness. All that quantum mechanics purports to describe are probability connections between subsequent impressions (also called "apperceptions") of consciousness, and even though the dividing line between the observer, whose consciousness is being affected, and the observed physical object can be shifted towards one or the other to a considerable degree, it cannot be eliminated.[157]

Yet most physicists still try to get around the idea of consciousness by attempting to explain it in material terms. Schwartz explains that it does not make sense to describe the mind in "terms of the positions of atoms, for one simple reason: the latter are derived from the former and have no fixed and non-probabilistic existence outside the former."[158] Wigner argues, "It seems inconsistent, therefore, to explain the state of mind of the observer, his apperception of the result of an observation, in terms of concepts, such as positions of atoms, which have to be explained,

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[155] Schwartz and Begley, 280.

[156] Ibid.

[157] Eugene P. Wigner, *Symmetries and Reflections* (Bloomington: Indiana University Press, 1967), 169.

[158] Schwartz and Begley, 283.

then, in terms of the content of consciousness."[159] Schwartz argues along the lines of Wigner that "[i]f the positions of atoms (and thus, for our purposes, the state and arrangement of neurons, since neurons are only collections of zillions of atoms) have no unambiguous existence independent of the consciousness of an observer… then how can that very consciousness depend on those same atoms?"[160] Consciousness must be treated as a real and independent substance. The reasons for this are best seen in the collapse of Schrödinger's wave function by the observer.

The collapse of the wave function by an observer is illustrated well through the double-slit experiment. David Hodgson explains that the origin of this experiment comes from Thomas Young's demonstration that the nature of light is more like a wave than a stream of particles. Hodgson summarizes this famous double-slit experiment in the following:

> Monochromatic light from a single source was made to pass through a screen with a narrow slit. It was then made to pass through a further screen with two narrow parallel slits, close together; and to fall on a further screen. With either of the two slits in the middle screen blocked, an oblong patch of light appeared on the third screen. With the two slits open, there appeared on the third screen, not a combination or sum of the oblong patches, as one would expect if light consisted of a stream of particles; but rather a series of light and dark bands. The explanation for this was found in the wave nature of light. Where waves (for example, in water) of equal amplitude and wave-length meet, they can interfere constructively and destructively. Where the phases of the waves are the same where they meet, so that two peaks or two troughs coincide, they reinforce one another, and there results a heightened peak or deepened trough. Where the phases of the waves where they meet are opposite, so that a peak and trough coincide, they cancel out, leaving no wave at that point. The bright centres of the light bands, then, were where the waves passing through the two slits interfered constructively so that the light wave was intensified; while the centres of the dark bands were where they interfered destructively, so that the light was destroyed.[161]

This experiment has been advanced so that the "source can be turned so low that only one photon

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[159] Eugene P. Wigner, "Are We Machines?" *Proceedings of the American Philosophical Society* 113, no. 2 (April 1969): 96.

[160] Schwartz and Begley, 283.

[161] David Hodgson, *The Mind Matters: Consciousness and Choice in a Quantum World* (Oxford: Clarendon Press, 1991), 203.

[particle of light] will be passing through the screen with the slits at any one time; yet if the display screen is prepared so as to be able to detect the arrival of single photons, over time the same interference pattern will be built up."[162] A similar experiment can be performed with electrons.[163] Hodgson explains, "If steps are taken to determine which hole each photon (or electron) passed through, it is found that, while measurements to this end can be made, the effect of doing so is to destroy the interference pattern."[164] He further explains, "The electron itself, then, until detection, is best regarded as a matter of potentialities, of probabilities quantified by the state function, that various values of observables such as position will be manifested if an appropriate measurement is made (or an appropriate interaction occurs)."[165] Hodgson also explains that "if the measurement of position cannot determine which slit gave rise to the potentiality actualized by the measurement, then in a sense the electron has 'gone through' both slits."[166] Many physicists, like Goswami, believe that the measurement is an act of conscious observation, which is what collapses the wave function. Thus, Goswami will argue that at the quantum level an event does not actually take place until it is observed.[167]

This is not just a special case of the nature of photons or electrons. Schwartz explains that similar experiments have been done with larger particles, "such as ions, with the identical results. And ions… are the currency of the brain, the particles whose movements are the basis for the action potential by which neurons communicate. They are also, in the case of calcium ions, the

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[162] Hodgson, 357.

[163] Ibid.

[164] Ibid.

[165] Ibid., 358.

[166] Ibid.

[167] Goswami, "Idealistic Interpretation," 385.

key to triggering neurotransmitter release. This is a crucial point: ions are subject to all of the counterintuitive rules of quantum physics."[168] In fact, Schwartz quotes Richard Feynman in saying that "[a]ny other situation in quantum mechanics, it turns out, can always be explained by saying, 'You remember the case of the experiment with the two holes? It's the same thing.'"[169] Goswami explains that in the Copenhagen interpretation the "collapse of the wave function upon observation (the reduction postulate) is introduced in order to connect theory and experiment, but the question of what constitutes a measurement has been left unanswered. And in view of the EPR-Bohr nonlocality [next section], the collapse is clearly nonlocal. The ontological implication of nonlocal collapse has not been studied."[170] Thus, the standard interpretation avoids the explicit role of the subject, but leaves it as a possibility. Goswami points out that the cost of leaving the subject out of the Copenhagen interpretation is "the baffling quantum/classical dichotomy. This dichotomy finds a straightforward resolution if we assume as von Neumann and Wigner have done, that consciousness, the observing subject, collapses the state function of a quantum system, not the 'classical' measuring apparatus."[171] Two common objections to the von Neumann-Wigner hypothesis are the question of mind over matter and solipsism. However, Goswami shows that if this hypothesis is interpreted within the framework of monistic idealism and its philosophy of consciousness, then the objections are resolved.[172] Thus, it is important to lay out a proper metaphysical system that supports the necessary role of a conscious observer in quantum physics.

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[168] Schwartz and Begley, 268.

[169] Ibid., 264.

[170] Goswami, "Idealistic Interpretation," 385.

[171] Ibid.

[172] Ibid., 385-386.

Goswami explains, "Heisenberg clearly saw that the answer to the riddle of the interpretation of quantum mechanics lay in Platonic idealism and not in the materialism that grew out of the atomistic ideas of Democritus. He envisioned that quantum objects are more like Platonic archetypes than billiard balls of Democritus' vintage."[173] In a discussion about "[w]hat happens 'really' in an atomic event," Heisenberg explains that "the term 'happens' is restricted to the observation. Now, this is a very strange result, since it seems to indicate that the observation plays a decisive role in the event and that the reality varies, depending upon whether we observe it or not."[174] Heisenberg continues to explain that "[t]he probability function does—unlike the common procedure in Newtonian mechanics—not describe a certain event but, at least during the process of observation, a whole ensemble of possible events."[175] Thus, he concludes that "observation itself changes the probability function discontinuously; it selects of all possible events the one that has taken place…. Therefore, the transition from 'possible' to 'actual' takes place during the act of observation."[176] As Stapp explains, "Heisenberg tied the mathematically described reduction events to the process of 'observation.'"[177]

The paradox of Schrödinger's cat is another topic usually discussed within the interpretations of quantum physics. Goswami explains this paradox in an idealistic context along with Wigner's resolution of it: "It is our consciousness whose observation of the cat resolves its schizophrenic alive-dead dichotomy. Coherent superpositions, the multifaceted quantum waves, exist in the never-never land of a transcendent order, until we bring them to the world of

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[173] Goswami, "Idealistic Interpretation," 388.

[174] Heisenberg, *Physics and Philosophy*, 50-52.

[175] Ibid., 54.

[176] Ibid.

[177] Stapp, 108.

appearance with the act of observation."[178] He clarifies that "in the process, we choose one facet out of two, or many, that are permitted by the Schrödinger equation; it is a limited choice, to be sure, subject to the overall probability constraint of quantum mathematics, but it is choice, nevertheless."[179] Within the understanding of monistic idealism, the nature of reality is consciousness. Thus, when a particle is in a wave packet of possibilities (or superposition), it is within the realm of consciousness. When the observer, through consciousness, chooses (knowingly or unknowingly and according to the rules of probability within the quantum calculus) an outcome out of the possibilities, he or she collapses the wave function.[180] Or as Schwartz describes it: "Is the choice made by nature, or the observer? According to the Copenhagen interpretation, it is the observer who both decides which aspect of nature is to be probed and reads the answer nature gives. The mind of the observer helps choose which of an uncountable number of possible realities comes into being in the form of observation."[181] One may find it hard to believe that observing something would have such an effect on the physical state. Goswami answers this by saying, "[I]n monistic idealism, objects are already in consciousness as primordial, transcendent archetypal possibility forms. The collapse is not about doing something to *objects* via observing, but choosing and recognizing the result of choice."[182] The materialist will argue that the role of consciousness has no effect on the collapse of the wave function. Goswami explains that "many physicists, even today, believe that somehow, the cat's wave function never becomes schizophrenic in the first place; somehow the wave function of the

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[178] Goswami, "Idealistic Interpretation," 389.

[179] Ibid.

[180] Ibid.

[181] Schwartz and Begley, 273.

[182] Goswami, "Idealistic Interpretation," 389.

atom (which does become schizophrenic; denying that would mean denying quantum mechanics) collapses somewhere in between, before its schizophrenia invades the cat."[183] However, the materialist is unable to provide a sound explanation of the wave function collapse when they exclude the observer. Stapp summarizes by saying:

> [C]lassical physics is now known by physicists to be fundamentally false: it has been superseded by quantum theory, which must in principle be used to describe the motions of the atoms and ions that underlie the macroscopic processes occurring in our nervous system. Classical mechanics is consequently, *in principle*, not the scientifically correct foundation for a treatment of the relationship between the macroscopic processes in our brain that are associated with our thoughts and feelings, and those thoughts and feelings themselves.
>
> The most profound change wrought by the shift from classical physics to quantum physics was the introduction into the physical dynamics of certain dynamically essential choices that are attributed to human beings, yet are not determined by, or constrained by, any known law, statistical or otherwise. These *human* choices are *not* the notorious quantum *random* choices, and they seem to us human beings to be, at least in part, consequences of our mental aspects. *Within the orthodox quantum framework these crucial human choices are not determined by any yet-known law, yet they can have powerful effects upon the physically described macroscopic behavior of our brains*.[184]

He clarifies a few important aspects in the following:

> It would indeed be misleading to understand the "action of mind upon brain" directly via a "force." The effect is associated with a modulation of the frequency of certain process 1 actions that act directly upon large-scale (brain-sized) patters of neurological activity. This modulation of frequencies is achieved, strictly within the pragmatic framework (that is, without any of Whitehead's ontological superstructure) by exploiting certain human "free choices" that are allowed within the pragmatic framework. This language suggests that the conscious act is the cause, and the correlated physical process 1 action is the effect. This interpretation ties the theory most naturally and directly to actual scientific practice. In actual practice the experimental options will be pursued, within the array of possibilities that the structure of the physical theory provides. Bohr … spoke, accordingly, of "the free choice of experimental arrangement for which the mathematical structure of the quantum mechanical formalism offers the appropriate latitude." We are dealing here with the sophisticated way in which mental intention influences quantum processes in the brain. *Ideas* do not simply push classically conceived particles around![185]

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[183] Goswami, "Idealistic Interpretation," 390.

[184] Stapp, 147.

[185] Stapp, 109-110.

Not only does quantum physics show the importance of recognizing consciousness as a real independent and immaterial substance, it also indicates that conscious beings have a certain freedom. Stapp defines a "template for action" as a "macroscopic (extending over a large portion of the brain) pattern of neurological activity that, if held in place for a sufficiently long period, will tend to produce a brain activity that will tend to produce an intended experienced feedback. This pattern of brain activity is the neural correlate (specified by a process 1 action) of a conscious effort to act in an intended way."[186] He elaborates on this idea in the following:

> Effort is a particular feature of consciousness that we feel we can control, and that has the effect of intensifying experience. Hence it is reasonable to suppose that increasing effort increases the rate at which conscious events are occurring. If the rate becomes sufficiently great then the quantum Zeno effect will, according to the quantum laws, kick in, and the repetitious interventions of the probing actions will tend to hold in place the template for action. That effect will, in turn, tend to make the intended action occur. By virtue of this dynamically explained causal effect of willful conscious effort upon brain activity, trial-and-error learning should hone the correlation between the consciously experienced intention and an associated template for action that produces, via the physical laws, the intended feedback. This *explains* dynamically the capacity of an effortful intention to bring about its intended consequence.[187]

Stapp further clarifies,

> [T]he *timings* of the process 1 actions are an aspect of the "free choice" on the part of the human observer. It is therefore plausible to conjecture that the effort-induced increase in the intensity of the projected intended experience is *caused* by an increase in the observation-controlled rate at which the associated process 1 actions are occurring. If the essentially identical process 1 actions occur in sufficiently rapid succession, then the associated neural correlate (i.e. the template for action) will be held in place by the quantum Zeno effect. The resulting *persistent* neural pattern of activity will then tend to cause the intended action to occur. The *effect* of the effort-induced increase in the rate of the process 1 probing actions is thus to hold in place the entire macroscopic template for action. The dynamical effect, via the neural machinery, of this holding in place is the likely occurrence of the intended action.[188]

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[186] Stapp, 111.

[187] Ibid.

[188] Ibid., 114.

Stapp explains, "[T]he effect of the effort is on an entire macroscopic neural pattern of brain activity."[189] He says, "This pattern has been singled out by von Neumann's process 1 action and is held in place by the quantum Zeno effect. By coupling von Neumann's dynamical rules to learning, one can rationally account for the observed—and essential for human life and survival—correspondence between experienced intent and experienced feedback."[190] He explains that the causal gap in quantum physics can be filled by "allowing our efforts to do what they seem to be doing. Embedded in an adequate ontology, quantum theory has the technical capacity to explain how a person's conscious efforts can influence his or her bodily actions."[191] Stapp says, "The quantum analog of the classical laws of motion is the Schrödinger equation. It determines the evolution of the state of the universe between quantum jumps, not the jumps! And the infamous element of 'quantum randomness' enters only into the (logically) second choice: the choice on the part of 'nature.'"[192] He also admits, "Orthodox theory is totally silent on the question of the causal roots of the first choice."[193] Goswami claims, "We *know* that an observation by a conscious observer ends the dichotomy. Thus it is obvious that the act of observation must be a jump out of the system, that the subject to consciousness must work from outside of the material world; in other words, the subject to consciousness must be transcendent."[194] In summary, a conscious observer is needed to make sense of the wave function collapse and this points to the realization that consciousness might be the fabric of reality.

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[189] Stapp, 114.

[190] Ibid.

[191] Ibid., 115.

[192] Ibid., 158.

[193] Ibid.

[194] Goswami, "Idealistic Interpretation," 391.

This certainly echoes the ideas of Leibniz, Kant, and Berkeley. With Berkeley's system in mind, hear again some of the claims from quantum physics. Schwartz says, "Integral to quantum physics is the fundamental role played by the observer in choosing which of a plenitude of possible realities will leave the realm of the possible and become actual."[195] Furthermore, he declares, "Quantum physics makes the seemingly preposterous claim (actually, more than claim, since it has been upheld in countless experiments) that there is no 'is' until an observer makes an observation."[196] John Archibald Wheeler, sounding a lot like Berkeley, said, "No phenomenon is a phenomenon until it is an observed phenomenon."[197] Similarly, the following quote from Schwartz sounds familiar to the ideas of Kant:

> Science is what we know, and what we know is only what our observations tell us. It is unscientific to ask what is "really" out there, what lies behind the observations. Physical laws as embodied in the equations of quantum physics, then, ceased describing the physical world itself. They described, instead, our knowledge of that world. Physics shifted from an ontological goal—learning what is—to an epistemological one: determining what is known, or knowable.[198]

Stapp once explained to Schwartz that "[i]n quantum theory, experience is the essential reality, and matter is viewed as a representation of the primary reality, which is experience."[199] Perhaps the most notable physicist who conveyed idealistic thoughts was Heisenberg.

Similar to Leibniz, Heisenberg argues that "the concept of smallest units of matter, the simple laws of which should be understood, leads at once into the well known troubles connected with the concept of infinity. A piece of matter can be divided; the parts can be divided again into

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[195] Schwartz and Begley, 263.

[196] Ibid.

[197] Ibid., 274.

[198] Ibid., 273-274.

[199] Ibid., 278.

smaller parts, these smaller part can be divided again etc., but we cannot imagine that this divisibility goes on forever."[200] Heisenberg also offers a more modern scientific account of Berkeley's argument about properties not belonging to matter. He explains that "[t]he great variety of different phenomena, the many observed properties of matter, can be reduced to the position and the motion of the atoms. Properties like smell or color or taste or temperature do not apply to the atoms; but the position or motion of the atoms can indirectly produce these properties of matter."[201] On the topic of the big accelerators attempting to split the elementary particles even further, Heisenberg notes, "When two particles collide with extremely high energy, they actually go into pieces, sometimes quite a number of pieces, but the pieces are not smaller than the particles that has been split…. Even in cosmic radiation where the available energy can occasionally be a thousand times larger than in the biggest accelerator, no different or smaller particles have been found."[202] Therefore, Heisenberg argues that an accurate explanation of these collisional phenomena "is not to say that particles have been split, but to speak about the creation of particles out of energy, according to the laws of relativity. We can say that all particles are made of the same fundamental substance, which may be called energy or matter; and to formulate: the fundamental substance 'energy' becomes 'matter' by assuming the form of an elementary particle."[203] It appears, then, that the best way to understand these elementary particles is in an idealistic sense. At the fundamental level these particles are immaterial waves of potential. They are not actually material and do not have size in the material sense, but they manifest as the appearance of matter. Heisenberg says, "In the experiments about atomic events

[200] Heisenberg, *Natural Law*, 11-12.

[201] Ibid., 15.

[202] Heisenberg, *Natural Law*, 30-31

[203] Ibid., 31.

we have to do with things and facts, with phenomena that are just as real as any phenomena in daily life. But the atoms or the elementary particles themselves are not as real; they form a world of potentialities or possibilities rather than one of things or facts."[204] This idea could be viewed as similar to Berkeley's idea that the common sense notion that most people have (realism) does not actually make sense when one investigates the very nature of matter. Roger G. Newton, author of *The Truth of Science*, explains, "The essential point to be stressed, and to that extent I agree with both Bohr and Heisenberg, is that *realism is a matter of scale*. It is one thing to be a realist at the scale of everyday life and experience, but quite another to try to carry that realism to the micro world, where neither our experience nor our language is adequate."[205]

Bohr also describes certain aspects of quantum physics that are in line with the theme of unity in idealism. For instance, he explains that "the discovery of the universal quantum of action to which Planck was led in the first year of our century by his penetrating analysis of the laws of thermal radiation…. revealed in atomic processes a feature of wholeness quite foreign to the mechanical conception of nature."[206] He states that this elementary quantum of action "revealed a feature of *wholeness* inherent in atomic processes, going far beyond the ancient idea of the limited divisibility of matter."[207] These ideas are similar to Leibniz's about the divisibility of matter and the idea of wholeness is essential to idealism. Further similarities between quantum physics and idealism will be seen even more in the idea of nonlocality.

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[204] Heisenberg, *Physics and Philosophy*, 186.

[205] Roger G. Newton, *The Truth of Science: Physical Theories and Reality* (Cambridge: Harvard University Press, 1997), 177.

[206] Niels Bohr, *Atomic Physics and Human Knowledge* (New York: John Wiley & Sons, 1958), 71.

[207] Niels Bohr, *Essays, 1958-1962, on Atomic Physics and Human Knowledge* (Bungay, Suffolk: Richard Clay, 1963), 2.

Nonlocality

Stapp explains that the "idea of locality is fairly simple and straightforward in classical physics, because in that setting everything has a material basis and all causal effect [*sic*] are associated with transfers of momentum or energy, which moves about in a continuous no-faster-than-light way."[208] However, "[i]n quantum theory the fundamental substrate of causation is more ephemeral: causation is carried by *potentialities for observational events to occur*. These potentialities *usually* change in a localized continuous way, but, in conventional quantum mechanics, they change abruptly in association with the occurrence of an actual observation or observer-controlled input."[209] Stapp explains that a "'cause,' such as the performance of a freely chosen measurement procedure in one region, can have a certain kind of instantaneous faraway effect without any energy or momentum *traveling* from the region of the cause to the region of the effect."[210] Thus, Stapp argues that "nonlocality" contrasts the locality assumption of relativity theory which says "that no *information* about which experiment is freely chosen and performed in one spacetime region can be present in a second spacetime region unless a point traveling at the speed of light (or less) can reach some point in the second region from some point in the first."[211] He further explains, "This assumption is valid in relativistic *classical* physics. Yet quantum theory permits the existence of certain experimental situations in which this information-based locality assumption fails."[212] In order to understand these experimental situations one must first understand the Pauli exclusion principle and Bell's theorem.

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[208] Stapp, 184.

[209] Ibid.

[210] Ibid.

[211] Ibid., 195.

[212] Ibid.

Michela Massimi, author of *Pauli's Exclusion Principle: The Origin and Validation of a Scientific Principle*, explains that in 1925 Pauli introduced what he called an "'extremely natural' prescriptive rule."[213] The rule claimed, "In an atom there cannot be two or more equivalent electrons for which the values of all four quantum numbers [principal, angular momentum, magnetic, and spin] coincide. If an electron exists in an atom for which all of these numbers have definite values, then this state is occupied."[214] Massimi explains, "It is thanks to Pauli's principle that one obtains the electronic configurations underlying the classification of chemical elements in Mendeleev's periodic table as well as atomic spectra. To this same principle we credit the statistical behaviour of any half-integral spin particles (protons, neutrons, among many others) and the stability of matter."[215] Furthermore, "it is the exclusion principle that fixes the crucial constraint for binding quarks in hadrons, which together with leptons compose our physical world."[216] This principle provides incredible explanatory power for many aspects of nature, but is it justified?

Massimi, among others, argues that it is. She explains how one year after Pauli introduced it, Enrico Fermi and Paul Dirac

> independently of each other… gave a more precise mathematical formulation to the rule by noticing that restriction to antisymmetric state functions implied it. The rule was accordingly reformulated as prescribing the mathematical nature of quantum states allowed for electrons: it excluded all classes of mathematically possible solutions of the wave equation for any two electrons different from the antisymmetric one. The resultant Fermi-Dirac statistics allowed a system of indistinguishable particles obeying Pauli's principle ('fermions') to be only in antisymmetric states.[217]

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[213] Michela Massimi, *Pauli's Exclusion Principle: The Origin and Validation of a Scientific Principle* (Cambridge: Cambridge University Press, 2005), 1.

[214] Ibid., 8.

[215] Ibid., 1.

[216] Ibid., 1-2.

[217] Ibid., 8.

Massimi explains, "When in 1940 Pauli proved the spin-statistics theorem, it became clear that not only electrons, but in fact *any* half-integral spin particle obeyed the Fermi-Dirac statistics, and hence the exclusion principle."[218] Furthermore, "when quarks were introduced in the 1960s, they were taken as particles obeying the exclusion principle, given their half-integral spin and the spin-statistics connection established by Pauli's theorem."[219] However, the discovery of "some prima facie negative evidence against quarks obeying Pauli's principle gave rise to two rival research programmes: the parastatistics programme that revoked the strict validity of the exclusion principle for quarks; and quantum chromodynamics that on the contrary reconciled the negative evidence by introducing a further degree of freedom ('colour') for quarks."[220] Massimi argues that it "was precisely the development of these two rival research programmes that, in different ways, strengthened the nomological validity of Pauli's principle."[221] Thus, Pauli's rule is considered "a building-block of physics, whose validity sweeps across nuclear and atomic physics, from condensed matter physics to quantum chromodynamics."[222] Some might dispute the validity of this principle, but this dispute and possible limitations of the rule are a topic for another discussion. For the purposes of this paper, Pauli's rule will be considered valid based on its explanatory power and success in quantum experiments. Pauli's exclusion principle will be seen at work in the idea of nonlocality where two paired electrons must have opposite spin because if the principal, angular momentum, and magnetic quantum numbers are all the same, then the spin must be opposite. This supports the idea of nonlocality because it was theorized

[218] Massimi, 8.

[219] Ibid.

[220] Ibid.

[221] Ibid.

[222] Ibid., 9.

that the measurement of the spin of one of the paired particles would have an instant affect on the other even if they were far away from each other. Einstein, Podolsky, and Rosen (EPR) disputed this theory in a 1935 paper. In their thought experiment the particles were "allowed to move far apart before any measurement is made, so that (according to the authors) any measurement made on one could not affect the other."[223] The nature of this experiment is explained well by Robert Nadeau and Minas C. Kafatos (who studied physics at Cornell University and received his Ph.D. in physics from the Massachusetts Institute of Technology).

Nadeau and Kafatos explain that if one assumes that "paired electrons originate in a single quantum state, like that featured in the EPR experiment, they must have equal and opposite spin as they move in opposite directions from this source."[224] They clarify that "since the spin of each paired electron is quantized and obeys the uncertainty principle, all components of the spin of a single electron cannot be measured simultaneously any more than position and momentum can be measured simultaneously."[225] Thus, a "measurement of the spin of an electron on one or the other of the two paths will, therefore, yield the result 'up' 50 percent of the time or 'down' 50 percent of the time, and we cannot predict with any certainty what the result will be in any given measurement."[226] Nadeau and Kafatos further explain:

> When viewed in isolation, the spin of each of the paired electrons will show a random fluctuation pattern that would confuse attempts to know in advance the spin of the other. But since we also know that each of the two paired electrons has equal and opposite spin, the random spins in one particle should match precisely, or correlate with, those of the other particle when we conduct the experiment many times and view both particles

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[223] Hodgson, 362.

[224] Robert Nadeau and Minas C. Kafatos, *The Non-Local Universe: The New Physics and Matters of the Mind* (New York: Oxford University Press, 1999), 70.

[225] Ibid.

[226] Ibid.

> together rather than in isolation.[227]

The debate from this EPR paper went on for several years until the thought experiments could be performed. John Bell was a key figure in theorizing a way to actually perform these experiments with definite results. In 1964 he deduced through a mathematical theorem "the most general relationships between two particles, like those in the EPR experiment, and showed that certain kinds of measurement could distinguish between the positions of Einstein and Bohr. One set of experimental results would prove quantum theory complete and Bohr correct, and another set would prove quantum theory incomplete and Einstein correct."[228] Nadeau and Kafatos explain how this was tested:

> [T]he relationship between spin states in paired electrons also applies to polarization states of paired photons. Polarization defines a direction in space associated with the wave aspect of the massless photon. The polarization of a photon, like the spin of an electron, also has a "yes" or "no" property that obeys the indeterminacy principle, and the relationship between these properties in paired photons is the same as that between paired electrons. Polarization of paired photons, like those in experiments testing Bell's theory, is equal and opposite, and the random polarization of one paired photon should precisely match or correlate with the other if the experiment is run a sufficient number of times.[229]

Nadeau and Kafatos declare that the "results of experiments testing Bell's theory clearly reveal that Einstein's assumption in the EPR thought experiment—that correlations between paired photons over space-like separated regions could not possibly occur—was wrong. The experiments show that the correlations do, in fact, hold over any distance instantly, or in 'no time.'"[230] They conclude, "Since this violates assumptions in local realistic theories, physical reality is not, as Einstein felt it should and must be, local. The experiments clearly indicate that

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[227] Nadeau and Kafatos, 70.

[228] Ibid., 69.

[229] Ibid., 70.

[230] Ibid., 74.

physical reality is non-local."[231] Stapp also argues that "what they [EPR] actually thereby proved was that Copenhagen precepts entailed the existence of faster-than-light transfers of information, though not the possibility of (relativity-theory-violating) faster-than-light signaling."[232] Hodgson explains, "[I]n a series of experiments culminating in those by Aspect in 1982, the predictions of quantum mechanics, along the lines considered by Bell, were confirmed, and correlations were observed exceeding those which could be explained in terms of pre-existing properties of the systems. In effect, non-locality was demonstrated and the EPR argument indeed undermined."[233]

The Einstein-Podolsky-Rosen paradox seems to support the idea that consciousness, not matter, is the fabric of the universe. Goswami explains that "if we look at the structure of quantum mechanics, we find in it examples of correlated pairs for which the observation of one object of the pair not only collapses the wave function of that object but must also collapse the wave function of the other object of the pair, even though the other object is spacelike separated from its partner."[234] This phenomenon, often called 'quantum entanglement,' works like this: "[I]f we make a measurement of one electron of the above pair and find it to be spin-up along a certain direction, its partner must take on spin-down along the same direction even if spacelike separated." [235] Goswami argues, "Since it is our measurement that collapses the spin of the two electrons in a particular state, we, our observation, must have the ability for nonlocal collapse, and this is a paradox for EPR."[236] Quantum entanglement is best explained through a monistic

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[231] Nadeau and Kafatos, 74.

[232] Stapp, 197.

[233] Hodgson, 361.

[234] Goswami, "Idealistic Interpretation," 393.

[235] Ibid.

[236] Ibid.

idealism system, since otherwise it violates Einstein's idea that information cannot travel faster than the speed of light. Aspect was able to demonstrate that the communication between two entangled particles is instantaneous, "occurring without the intermediary of a local signal."[237] EPR is a paradox because it does not make sense in a materialistic universe. Einstein and his collaborators argued that there must be hidden variables involved. However, even if there are hidden variables, it has been shown that even these variables must also be nonlocal. Goswami explains that "the paradox is easily resolved if the locality assumption is given up. Thus one way out is to theorize that there is an 'ether' behind the space-time scene where faster-than-light signals are allowed, and the two electrons are correlated by this superluminal connection."[238] This "ether" can best be explained by a reality of consciousness. Goswami summarizes by saying, "Thus the lesson of EPR may well be that a correlated quantum system has the attribute of a certain unbroken wholeness not only among its parts but also with consciousness, an innate connection that transcends space – a nonlocal relationship. … [U]ltimately, the lesson of EPR for quantum mechanics may be to embrace idealism."[239] Quantum physics appears to support the monistic idealism idea that reality is made up of consciousness rather than matter. Stapp summarizes these ideas in the following:

> The failure of this locality condition absolutely precludes the possibility that the real world actually conforms to the precepts of classical physics. We do live in a quantum world in which far-apart aspects are linked in ways quite contrary to the mechanistic conception of nature postulated by classical mechanics. A beautiful, intricate, and rationally coherent mathematical machinery has been discovered that transforms the mechanistic mindless concepts of classical physics over to a highly tested, useful, and accurate mathematical picture of a nonlocal reality in which our streams of consciousness are naturally and efficaciously imbedded. It would seem that the quantum conception of

[237] Goswami, "Idealistic Interpretation," 394.

[238] Ibid., 393.

[239] Ibid.

> nature is, from the perspective of science, the appropriate physics foundation of any ostensibly deep inquiry into the details of the mind-matter connection, and hence into the nature of our own being.[240]

Quantum physics appears to be a natural building block for a metaphysical foundation imbedded in monistic idealism. The two systems seem to support one another. Further support for monistic idealism can be seen in experiments done in psychology.

Psychology

Countless experiments and studies have been done in neuropsychology and with the placebo effect that justify the idea of consciousness having influence over matter (primarily the brain). Perhaps it is worth mentioning in passing that the eminent psychologist Carl Jung's theory of the collective unconscious might support monistic idealism; however, that is a discussion for another work. In this section three specific topics in psychology will be discussed to provide further evidence for monistic idealism. The first topic will be nonlocal brain communication, next will be mental focus, and the final subject will be the placebo effect.

Nonlocal Communication

Nonlocality is not only seen in quantum entanglement. Goswami outlines a series of experiments done that show nonlocal communication between two people without the exchanging of signals. The neurophysiologist Jacobo Grinberg-Zylberbaum at the University of Mexico performed the first of these experiments.[241] Goswami summarizes this experiment in the following:

> Two people meditate together for twenty minutes with the intention that they

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[240] Stapp, 200.

[241] Amit Goswami, *God Is Not Dead: What Quantum Physics Tells Us About Our Origins and How We Would Live* (Charlottesville, VA: Hampton Roads Publishing Company, Inc., 2008), 68.

> communicate non-locally, directly, without exchange of any signals. After the twenty minutes they are separated, and put into individual faraday chambers. These are electromagnetically impervious chambers. They still maintain that meditative state of intention. Now their brains are connected to individual EEG machines (Electroencephalogram). One subject, and only one subject, is shown a series of light flashes. This obviously produces electro magnetic activity in the brain and this electrical activity is recorded in the brainwaves in the EEG connected to the brain. From that, a potential can be extracted which is called Evoked Potential, potential evoked by the light flashes. The other subject in the meantime is just meditating. There is no light flash for him or her but the EEG machine connected to the brain of the second observer who doesn't see any light flashes nevertheless depicts a transferred potential very similar in both phase and strength to the evoked potential that the first observer's EEG gives us. How does electrical activity transfer from one brain to another without any electromagnetic connection? Without any signal? The answer is quantum non-locality. The answer is nonlocal consciousness collapses similar events in both brains because through their intention they have become correlated, non-locally. There is no other way of understanding this result.[242]

Furthermore, "[c]ontrol subjects (who do not meditate together or are unable meditatively to hold the intention for signal-less communication during the experiment) do not show any transferred potential."[243] These results are astonishing and certainly provide further evidence for nonlocality. As Goswami explains, "The experiment demonstrates the nonlocality of brain responses to be sure, but also something even more important—nonlocality of quantum consciousness."[244] Conversely, Goswami acknowledges that "for a while scientists objected. 'Ok maybe Jacobo's methodology was not quite right. Maybe there was something wrong with the statistics.'"[245] However, the experiment has been reproduced a number of times— "first, by the neuropsychiatrist Peter Fenwick and collaborators (Sabell *et al*., 2001) in London; second by Jiri Wackermann *et al*. (2003); and third, by the Bastyr University researcher Leanna Standish and

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[242] *The Quantum Activist*, Directed by Ri Stewart and Renee Slade, featuring Amit Goswami (Intention Media Inc., DVD, 2009).

[243] Goswami, *God is Not Dead*, 69.

[244] Ibid.

[245] *The Quantum Activist*.

her collaborators (Standish *et al*., 2004)."[246] Thus, since these experiments can be reproduced, there is good evidence that brains can communicate nonlocally.[247] Goswami explains that this proves "that consciousness is indeed nonlocal. It's cosmic. Consciousness that chooses from quantum possibilities making an actual event. Consciousness that creates this universe of manifestation is indeed nonlocal consciousness. Now you can call it God if you'd like. You don't have to. It's objective and it's scientific."[248] Goswami believes that quantum physics points to an impersonal god, which may partly be because in his physics classes it was unacceptable to have any direct reference to God.[249] However, in his book *God is Not Dead,* he states, "These experiments usher a new paradigm of science based not on the primacy of matter, like the old science, but on the primacy of consciousness. Consciousness is the ground of all being, which we now can recognize as what the spiritual traditions call Godhead (Christianity), Brahman (Hinduism), Ain Sof (Judaism), Shunyata (Buddhism), and so on."[250] Goswami believes that in order for people's conscious choices to manifest they have to align with the "ground of all being."[251] He further believes that one of the best qualities a person can manifest is the circuit of love.[252] How can love be a desirable quality if the ground of all being is an impersonal god? An impersonal god that people have to align with seems more deterministic. In order for a person's

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[246] Goswami, *God is Not Dead*, 69.

[247] *The Quantum Activist*.

[248] Ibid.

[249] Amit Goswami, interviewed by Kevin Moore, *The Moore Show*, June 6, 2013, accessed April 8, 2016, http://www.themooreshow.co.uk/past-shows.php?show_id=265.

[250] Goswami, *God is Not Dead*, 69.

[251] Amit Goswami, interviewed by Kevin Moore, *The Moore Show*, June 6, 2013, accessed April 8, 2016, http://www.themooreshow.co.uk/past-shows.php?show_id=265.

[252] Ibid.

conscious choice to manifest, it would make more sense that their will has to align with the will of a personal loving God that is the creator and sustainer of reality as described by the philosophers in the first two chapters of this project. Nonetheless, Goswami's connection of quantum physics to spirituality is revolutionary.

Mental Force

Additional support that it is the act of a conscious observer that collapses the wave function can be found in a test done with the double-slit experiment. This test done by Dean Radin, Leena Michel, Karla Galdamez, Paul Wendland, Robert Rickenbach, and Arnaud Delorme had the following results:

> A double-slit optical system was used to test the possible role of consciousness in the collapse of the quantum wave function. The ratio of the interference pattern's double-slit spectral power to its single-slit spectral power was predicted to decrease when attention was focused toward the double slit as compared to away from it. Each test session consisted of 40 counterbalanced attention-toward and attention-away epochs, where each epoch lasted between 15 and 30 s. Data contributed by 137 people in six experiments, involving a total of 250 test sessions, indicate that on average the spectral ratio decreased as predicted (z=-4.6, p=6×10^{-6}). Another 250 control sessions conducted without observers present tested hardware, software, and analytical procedures for potential artifacts; none were identified (z=0.43, p=0.67). Variables including temperature, vibration, and signal drift were also tested, and no spurious influences were identified. By contrast, factors associated with consciousness, such as meditation experience, electro cortical markers of focused attention, and psychological factors including openness and absorption, significantly correlated in predicted ways with perturbations in the double-slit interference pattern. The results appear to be consistent with a consciousness-related interpretation of the quantum measurement problem.[253]

This test not only provides evidence that it is the conscious observer that collapses the wave function, but also that when a conscious observer focuses on one result rather than another, the result that was focused on becomes more likely to actualize. The result is even more likely to be

[253] Dean Radin, Leena Michel, Karla Galdamez, Paul Wendland, Robert Rickenbach, and Arnaud Delorme, "Consciousness and the double-slit interference pattern: Six experiments," abstract, *Physics Essays*, 25, no. 2 (2012): 157.

actualized if the observer has experience in meditation. There have been many experiments in psychology demonstrating the power of mental force; however, this particular one ties the mental force aspect directly to a quantum physics experiment and has profound results.

Regarding the view that consciousness is involved in the quantum measurement problem (QMP), the authors of this article explain that this theory has been recognized by physicists "ranging from d'Espagnat to von Neumann, from Stapp to Squires. The significance of the proposition and the prominence of those who have proposed it have made the idea difficult to blithely ignore, but to many it challenges a deeply held intuition that the physical world was here, more or less in its present form, long before human consciousness evolved to observe it."[254] Quantum physics may be able to provide evidence to counter this materialistic view. Specifically, the double-slit experiment provides a method of putting these two theories to test in hopes of determining the role of observation in the QMP. The authors explain that the experiment is based on two assumptions. The first one is "(a) [i]f information is gained—by any means—about a photon's path as it travels through two slits, then the interference pattern will collapse in proportion to the certainty of the knowledge gained." [255] The second one is "(b) if some aspect of consciousness is a primordial, self-aware feature of the fabric of reality, and that property is modulated by us through capacities we know as attention and intention, then focusing attention on a double-slit system may in turn affect the interference pattern."[256] The authors summarize three prior experiments that were similar to their own. The first experiment was done by a team at York University and was followed up by a second experiment at Princeton University.[257]

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[254] Radin et al., 158.

[255] Ibid.

[256] Ibid.

[257] Ibid.

Radin et al. explain that:

> The goal in both experiments was to shift the mean of a variable that measured the wavelike versus particlelike nature of the interference pattern. The York team reported a nonsignificant mean shift opposite to the predicted direction (although curiously, the data showed a significantly larger variance than would be expected by chance); the Princeton team reported a modestly significant mean shift in the predicted direction (p=0.05).[258]

Perhaps the most notable of the three prior experiments was the third one. Radin et al. summarize this experiment in the following:

> The third experiment involved a Michelson interferometer located inside a light-tight, double-steel-walled, electromagnetically shielded chamber. Participants one at a time sat quietly outside the chamber and were instructed to direct their attention toward or away from one arm of the interferometer. Interference patterns were recorded once per second and the average intensity levels of those patterns were compared in 30 s counterbalanced attention-toward and attention-away epochs. At the completion of the experiment, the results were in accordance with the prediction (p=0.002), i.e., interference was reduced during the observation periods. This outcome was primarily due to nine sessions involving experienced meditators ($p=9.4\times10^{-6}$). The remaining nine sessions with nonmeditators did not produce effects differing from those of chance (p=0.61). Control runs using the same setup but with no observers present also produced chance results.[259]

Since the experiment by Radin et al. is not the only experiment with the same results, the probability that their results are accurate rises, much like the series of experiments from the last section on nonlocal communication.

The methodology and precautions of the Radin et al. test were very well thought out. The experiments considered and put to test a number of possible interferences and conditions to safeguard the results. For example, "To avoid potential biases associated with selective data reporting, all completed test sessions in the experiments described here, both preplanned and exploratory, were considered part of the formal experimental database and are reported."[260] The

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[258] Radin et al., 158.

[259] Ibid.

[260] Ibid., 159.

experimenters also factored in conditions such as the participant's distance from the optical system and they even considered the influence of temperature variances from a person leaning toward the device when they were focusing on it and leaning back when they were relaxed. They explain that such behavior "might have introduced changes in radiant heat impinging on the optical system, and that in turn might have influenced the interference pattern."[261] For instance, "[T]he distance between the slits or the length of the HeNe laser tube might have expanded or contracted slightly due to temperature fluctuations. To test this possibility, a third experiment was designed to explore the effects of human body heat in proximity to the double-slit apparatus."[262] A further consideration that these experimenters made dealt with the hypothesis that "[i]f the consciousness collapse interpretation of the QMP is valid, then this implies that the collapse occurs when observation takes place, and not when the event is generated."[263] To test this theory, "[A] retrocausal version of the experiment was designed. This test also provided a more rigorous way to test the effect of participants' proximity to the optical system, because the data in this study were generated and recorded with the apparatus located by itself inside the electromagnetically shielded chamber, and with no one else in the laboratory."[264] For this experiment, "Fifty sessions with 30 s counterbalanced epochs were recorded in the IONS laboratory in April 2009. No one was present during the process of data generation and recording, and the data remained unobserved. In June 2009, participants were asked to view a strip-chart display, which unbeknownst to them played back prerecorded but previously unobserved

[261] Radin et al., 163.

[262] Ibid.

[263] Ibid., 164.

[264] Ibid.

data."[265] The results of this experiment supported their hypothesis, specifically in the test subjects who had experience in meditation.[266] Another precaution that the experimenters made was to "eliminate the possibility that results observed in the initial experiments might have been due to differential vibrations associated with the computer's spoken instructions, [so] the computer's automated condition assignments were presented over headphones."[267] With all of the considerations and preventative measures this study includes, it seems as though it was as exhaustive and impartial as it could be.

However, the results of the overall test were not particularly high. It is certainly not as if every time a subject was focusing their attention toward the double-slit optical the photons would only go through one of the slits instead of create an interference pattern (far from it). The statistics only support their hypothesis moderately. Nevertheless, the results departed from normal chance probability as well as from control runs in which an observer was present and focusing attention toward the double slit optical as opposed to away from it. Furthermore, experienced meditators had a significantly higher degree of success rate than nonmeditators. For example, the second experiment "provided modest evidence in favor of the hypothesis ($z=-1.39$), and in the IONS lab meditators again showed superior performance ($z=-2.04$) as compared to nonmeditators ($z=-0.49$)."[268] These results show that conscious efforts impact the results and specifically that people with experience in meditation (conscious effort) have a higher success rate.

If one assumes, as monistic idealism claims, that the very foundation of reality is

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[265] Radin et al., 164.

[266] Ibid.

[267] Ibid., 165.

[268] Ibid., 163.

ultimately in God's consciousness, then it makes sense that conscious efforts may play a part in the manifestation of reality, if God allows for it. Since it is ultimately God who creates and sustains the world, it is ultimately up to Him to choose which of the many possibilities will be actualized. However, it becomes a matter of free will whether God allows people to have any weight (and how much weight) in determining these actualities. From these psychological studies, it seems as though God does grant at least some degree of freedom in His creation's choices. More specifically, it would appear as though those individuals who are more in tune with their conscious efforts are accorded a greater degree of weight in this manifestation. This is consistent with the Christian idea of faith and its differing degrees, ranging all the way to walking on water (Peter) and Jesus' teaching that faith can move mountains. These are, of course, examples of tremendous faith, and the subject of miracles would need to be discussed if this topic were to be further pursued. It makes sense, along the lines of both quantum physics and monistic idealism, that such miracles would be rare and that the natural world would follow the laws that it does (e.g., gravity), because these laws stem from the very logical nature of God and how He thinks. Anything deviating from these laws would require the allowance of God and deviation from His natural laws. Thus, it would have to be an event that is in line with the will of God and based on the faith of an agent that He has granted free will. The fact that the results in this test only modestly supported the authors' hypothesis could actually be supportive of monistic idealism in this sense.

The article concludes by discussing why, given that it is so central to the interpretation of quantum physics, there is not more experimental literature testing these ideas. They suggest that it is because the "notion that consciousness may be related to the formation of physical reality has come to be associated more with medieval magic and so-called New Age ideas than it is with

sober science. As a result, it is safer for one's scientific career to avoid associating with such dubious topics and subsequently rare to find experiments examining these ideas in the physics literature."[269] However, they were able to find

> over a thousand peer-reviewed studies reporting (a) experiments testing the effects of intention on the statistical behavior of random events derived from quantum fluctuations, (b) studies involving macroscopic random systems such as tossed dice and human physiology as the targets of intentional influence, (c) experiments involving sequential observations to see whether a second observer could detect if a quantum event had been observed by a first observer, or if time-delayed observations would result in similar effects, and (d) experiments investigating conscious influence on nonliving systems ranging from molecular bonds in water to the behavior of photons in interferometers.[270]

There definitely seems to be a movement, despite how small of a movement it may be, in the direction of recognizing consciousness and mental force as real phenomena.

Schwartz's work with OCD patients is also a powerful discovery that shows how through mental force and intentions people can essentially rewire their brain. Schwartz developed an excellent Four Steps program that assists OCD patients in reshaping their brain. He explains that "[m]indfulness, as applied in the Four Steps, alters how the connections between the orbital frontal cortex and the caudate nucleus function. The power of attention, and thus the power of mind, reshapes neural circuitry and cortical maps—and does so by means of what I call Directed Mental Force."[271] He provides an insightful analysis of similar work and explains, "[O]ther scientists began collecting data showing that, as in my own studies of OCD patients, brain changes do not require changes in either the quantity or the quality of sensory input. To the contrary: the brain could change even if all patients did was use mindfulness to respond to their

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[269] Radin, et al., 170.

[270] Ibid.

[271] Schwartz and Begley, 368.

thoughts differently. Applied mindfulness could change neuronal circuitry."[272] He describes how neuronal circuits change when "something as gossamer as our thoughts changes, when something as inchoate as mental effort becomes engaged—when, in short, we choose to attend with mindfulness."[273] Schwartz argues, "The power of attention not only allows us to choose what mental direction we will take. It also allows us, by actively focusing attention on one rivulet in the stream of consciousness, to change—in scientifically demonstrable ways—the systematic functioning of our own neural circuitry."[274]

Schwartz clarifies that the brain does usually behave as a machine, as it "registers sensory information, processes it, connects it with previously stored sensory experience, and generates an output."[275] His work with OCD patients demonstrates that "[w]hen an obsessive thought or compulsive urge enters a patient's mind, the feelings of fear and anxiety it generates are biologically determined. But, as clinical data and PET scans show, patients can willfully change the amount and quality of attention that they focus on those cerebrally generated feelings of anxiety and stress, changing in turn the way the brain works."[276] He elucidates this by saying, "Through changes in the way we focus attention, we have the capacity to make choices about what mental direction we will take; more than that, we also change, in scientifically demonstrable ways, the systematic functioning of neural circuitry. … By Refocusing attention in a mindful fashion, patients change their neurochemistry."[277] Thus, Schwartz proclaims that there

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[272] Schwartz and Begley, 236.

[273] Ibid., 367.

[274] Ibid.

[275] Ibid.

[276] Ibid., 368.

[277] Ibid.

is now a "scientific basis for asserting that the exercise of the will, the effort of attention, can systematically change the way the brain works. The act of focusing attention has both clinical efficacy… and biological efficacy. Mind, we now see, has the power to alter biological matter significantly; that three-pound lump of gelatinous ooze within our skulls is truly the mind's brain."[278] This work of Schwartz's is incredible and provides further evidence of mental force. Even more grounds for accepting mental force will be seen in the placebo effect.

Placebo Effect

Mario Beauregard, author of the journal article "Effect of mind and brain activity: Evidence from neuroimaging studies of psychotherapy and placebo effect," reviews "neuroimaging studies of the effect of psychotherapy in patients suffering from diverse forms of psychopathology (obsessive compulsive disorder, panic disorder, unipolar major depressive disorder, spider phobia)" [279] as well as "neuroimaging studies of the placebo effect in healthy individuals (placebo analgesia, psychostimulant expectation) and patients with Parkinson's disease or unipolar major depressive disorder."[280] His review of recent neuroimaging studies on such patients "strongly support the view that the subjective nature and the intentional content of mental processes significantly influence the various levels of brain functioning (e.g. molecular, cellular, neural circuit) and brain plasticity."[281] These results are in line with expectations of monistic idealism.

Beauregard explains that placebo "refers to 'any treatment —e.g. psychotherapy, drugs,

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[278] Schwartz and Begley, 369.

[279] Mario Beauregard, "Effect of mind on brain activity: Evidence from neuroimaging studies of psychotherapy and placebo effect," *Nordic Journal Of Psychiatry* 63, no. 1 (February 2009): 5.

[280] Ibid.

[281] Ibid.

surgery, and quack therapy— used for its ameliorative effect on a symptom or disease but that is actually ineffective or not specifically effective for the condition being treated.' The study of the placebo effect is the study of the psychosocial context (in particular, the therapist's words) that affects the therapeutic outcome."[282] He argues, "The psychophysiological responses induced by placebos appear to reflect a mind/body interaction that is guided by subjective factors such as beliefs, expectations, meaning, hope for improvement and relational parameters."[283] The complete results that Beauregard arrived at are the following:

> [T]he neuroimaging studies of placebo corroborate that the patient's beliefs and expectations play a crucial role in this effect. These results also confirm the notion that the placebo effect can be extremely specific. Thus, in PD [Parkinson's disease] patients a clinical placebo response can be associated with release of endogenous dopamine in the striatum or decreased activity in single neurons of the STN [sub-thalamic nucleus]. As for MDD [major depressive disorder], placebo can induce metabolic changes in cortical and paralimbic brain regions that are relatively comparable with those of fluoxetine. Moreover, placebo manipulations can diminish neural activity in pain-responsive regions such as the rACC [anterior cingulate cortex], anterior insula and thalamus, and activate the endogenous opioid system in the DLPFC [dorsolateral prefrontal cortex], pregenual rostral ACC, anterior insular cortex and nucleus accumbens. Importantly, in one of the experiments conducted by Wager et al., placebo-induced BOLD [blood-oxygen-level-dependent] signal increases in DLPFC were correlated with placebo-induced BOLD signal decreases during pain in the thalamus, insula and rACC. In addition, in the Zubieta et al. study, endogenous opioid activity in the DLPFC was significantly correlated with the magnitude of analgesia expected by the volunteers before placebo administration. Collectively, the results of the neuroimaging studies of placebo effect indicate that beliefs and expectations can markedly modulate neurophysiological and neurochemical activity in brain regions implicated in perception, movement, pain and various aspects of emotion processing.[284]

The overall results of these neuroimaging studies align with the arguments and studies examined throughout this project and show with strong evidence that the mind has the ability to influence the brain. Beauregard analyzed several different placebo studies that each varied in what disease

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[282] Beauregard, 8.

[283] Ibid.

[284] Ibid., 13-14.

was being treated and each one took preventive measures to assure accurate results such as control subjects and blind studies wherein the people administrating the experiment did not know if they were supplying a placebo or actual drug. By way of interpreting these results, Beauregard has a number of insights.

Beauregard argues that the results of these neuroimaging studies challenge the psychophysical identity theory and epiphenomenalism, "the belief that mental processes and subjective experience are merely epiphenomena of underlying neuronal processes."[285] He explains that the psychophysical identity theory holds that "mental processes (including intentional ones) are identical with neural processes. For epiphenomenalism, mental processes are causally inert epiphenomena (side-effects or by-products) of neural processes."[286] He further explains how "[t]hese findings also call in question eliminative materialism (or eliminativism). According to this philosophical position, mental processes and functions (e.g. consciousness, intentions, desires, beliefs, self) can be reduced entirely to brain processes."[287] Regarding these materialist views, Beauregard says that the "physically describable brain mechanisms represent the core and final explanatory vehicle for every kind of psychologically described data. These views are extremely counterintuitive, since our most basic experience teaches us that our choice of perspective about how we apprehend our mental states makes an enormous difference in how we respond to them."[288] He further argues, "We must keep in mind that the whole human person—not merely a part of her brain—thinks, feels or believes. Indeed, the human person

[285] Beauregard, 5.

[286] Ibid., 14.

[287] Ibid.

[288] Ibid.

cannot be reduced to neural processes."[289] Contrary to the psychophysical identity theory and epiphenomenalism, Beauregard argues that the results of these studies "strongly suggest that mentalistic variables (e.g. consciousness, metacognition, volition, beliefs, hopes) and their intentional content (the first-person perspective) are neither identical with nor reducible to brain processes."[290] Beauregard contends that these studies "also suggest that mental processes/events do exert a causal influence on brain plasticity and the various levels of brain functioning (e.g. molecular, cellular, neural circuit). Indeed, by changing our mind we are changing our brain."[291] This notion directly supports Schwartz's work with OCD patients as well, providing higher probability of it being accurate.

The view that Beauregard relies on to account for the impact of the mind on the brain is interactionism. He says, "[T]he most commonly held objection to interactionism is that it is not compatible with the causal closure of the physical world. This metaphysical belief implies that mind cannot exert any causal influence on the physical world. Nevertheless, orthodox quantum theory is supportive of interactionism."[292] Thus, Beauregard also recognizes the correlation between quantum theory and the role of consciousness. The view of interactionism is usually classified as a metaphysical dualism. However, the way that he understands it actually appears to be more in line with monistic idealism. To illustrate this, he argues that in order to properly interpret the results of these neuroimaging studies, a hypothesis is needed that accounts for the relationship between the mental activity and brain activity.[293] The hypothesis that he proposes is

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[289] Beauregard, 14.

[290] Ibid.

[291] Ibid.

[292] Ibid.

[293] Ibid., 15.

the Psychoneural Translation Hypothesis (PTH). He explains that "[a]ccording to the PTH, the mind (the psychological world, the first-person perspective) and the brain (the 'physical' world, the third-person perspective) represent two epistemologically and ontologically distinct domains that can interact because they are complementary aspects of the same underlying reality." [294] Thus, Beauregard argues, "The PTH posits that mind (including consciousness) represents an irreducible and fundamental aspect of our world."[295] The idea of two complementary aspects of the same underlying reality is very similar to what Stapp and Schwartz argued and appears to be in agreement with monistic idealism.

[294] Beauregard, 15.

[295] Ibid.

Interpretation Objection

One main objection from Victor Stenger, among others, is that the physicists who made the original quantum physics discoveries did not choose their wording carefully and it is because of their poor word choices that people make idealistic interpretations of quantum physics. Stenger states:

> Ironically, this seemingly profound association between quantum and mind is an artifact, the consequence of unfortunate language used by Bohr, Heisenberg, and others who originally formulated quantum mechanics. In describing the necessary interaction between the observer and what is being observed, and how the state of a system is determined by the act of its measurement, they inadvertently left the impression that human consciousness enters the picture to cause that state to come into being. This led many who did not understand the physics but liked the sound of the words used to describe it to infer a fundamental human role in what was previously a universe that seemed to have need for neither gods nor humanity. If Bohr and Heisenberg had spoken of measurements made by inanimate instruments rather than by "observers," perhaps this strained relationship between quantum and mind would not have been drawn. For nothing in quantum mechanics requires human involvement.[296]

However, these physicists were in fact very aware of the wording that they were using and the implications they held. They were scientists and philosophers who understood exactly what they were implying with their profound discoveries. For example, Niels Bohr poses the question, "What is it that we humans ultimately depend on?"[297] He answers that humans depend on words and that it is their duty to communicate "experience and ideas to others. We must strive continually to extend the scope of our description, but in such a way that our messages do not thereby lose their objective or unambiguous character…. We are suspended in language in such a way that we cannot say what is up and what is down. The word 'reality' is also a word, a word which we must learn to use correctly."[298] These scientists knew that they were making

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[296] Victor J. Stenger, "The Myth of Quantum Consciousness," *The Humanist* 53, no. 3 (May/June 1993): 15.

[297] Newton, 176.

[298] Ibid.

revolutionary discoveries in the understandings of physics that would change the world. Heisenberg says:

> Light and matter are both single entities, and the apparent duality arises in the limitations of our language. It is not surprising that our language should be incapable of describing the processes occurring within the atoms, for, as has been remarked, it was invented to describe the experiences of daily life, and these consist only of processes involving exceedingly large numbers of atoms. Furthermore, it is very difficult to modify our language so that it will be able to describe these atomic processes, for words can only describe things of which we can form mental pictures, and this ability, too, is a result of daily experience. Fortunately, mathematics is not subject to this limitation, and it has been possible to invent a mathematical scheme — the quantum theory — which seems entirely adequate for the treatment of atomic processes; for visualization, however, we must content ourselves with two incomplete analogies — the wave picture and the corpuscular picture.[299]

Thus, Heisenberg, too, knew full well that he was making profound discoveries and that language is limiting the description of this newly discovered reality. Stenger is an advocate of mechanism, which may be what makes him think that idealism is not a realistic interpretation of quantum physics.[300]

C.J. List also had the same initial reaction as Stenger: "My first reaction to this was that it was yet another case of loose talk on the part of scientists and popularizers of science when they are trying to explain complicated things to nonscientists."[301] However, he later realized that the physicists actually meant what they were saying:

> My convenient hypothesis that this new movement toward subjective idealism was a result of loose talk on the part of scientists writing for popular consumption was forever falsified by the essay of the physicist Eugene Wigner. Wigner says for example that: "When the province of physical theory was extended to encompass microscopic phenomena, through the creation of quantum mechanics, the concept of consciousness came to the fore again: It was not possible to formulate the laws of quantum mechanics in

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[299] Werner Heisenberg, *The Physical Principles of the Quantum Theory* (Dover Publications: New York, 1950), 10-11.

[300] Victor Stenger, *God and the Atom: From Democritus to the Higgs Boson: The Story of a Triumphant Idea* (Amherst, N.Y: Prometheus Books, 2013), 22.

[301] C J. List, "Realism, Idealism and Quantum Mechanics," *Philosophy in Science* 3 (January 1988): 58.

> a fully consistent way without reference to the consciousness….” At this point I simply had to begin to take it seriously— some physicists really do not believe the moon is there when nobody is looking.[302]

List seems to have a misunderstanding of idealism. It would be helpful for him if he understood that the entire idealistic system is dependent on God perceiving all things (not humans). List believes “[t]he idealist maintains that everything depends for its existence upon the existence of a human mind.”[303] One of the key features in Berkeley’s philosophy, as seen in chapter two, was that existence is ultimately dependent on God’s mind.

[302] List, 59.

[303] Ibid.

Conclusion

Through the analysis of idealistic arguments and evidence from physics, it has been shown that monistic idealism has a great deal of explanatory power as a metaphysical system for the reality that one experiences. Some of the arguments that support this claim include the inadequateness of Cartesian matter, the seemingly infinite divisibility of atoms, matter being reducible to sensations, the unnecessary aspect of matter given a creator, and simplicity. Further evidence was found in support from quantum physics. Such factors include the necessary role of an observer in the collapse of a quantum wave function and the element of nonlocality. Psychological experiments including nonlocal communication, the power of mental force, and the placebo effect also provide justification for monistic idealism.

The Copenhagen interpretation of quantum physics and its implications support an understanding that consciousness is the fabric of reality. The discoveries made at the quantum level are understood well through a monistic idealism system, especially the role of a conscious observer in the wave function collapse and in the nonlocality that is required by quantum physics. Mohanty agrees that an idealistic reading of the Copenhagen interpretation best explains the data and that it has support from strong philosophical arguments within idealism.[304] Mohanty explains that quantum physics supports Kant's idea that it is not objects that affect observers, but the observers that affect objects. He states that the "world (as well as things in the world) are not… objects (*Gegenstände*) for whom man is the subject. Rather, man's being-in-the world is characterized by a prospective caring concern, and his understanding of the world (upon which the sciences are founded) is inseparable from his projects and presuppose the pre-understanding

[304] J N. Mohanty, "Idealism and Quantum Mechanics," *History Of Philosophy Quarterly* 6, no. 4 (October 1989): 381.

grounded in the temporality of his existence."[305] However, contrary to Kant, he argues that the observer and the object are both in one unified system.[306] This is the point of monistic idealism; that reality takes place within a unified realm of consciousness, thus eliminating the mind-body problem. Goswami argues that the philosophy of dualism is not "considered tenable if we take a scientific, explanatory, and verifiable approach. Take the dualism of consciousness and matter, for example. If consciousness and matter are truly dualistic, that is, made of two entirely different substances, then how do they interact? Their interaction requires a mediator. The obvious absence of a mediator speaks in favor of monism."[307] This mind-body problem was one of the main reasons why this investigation of the plausibility of idealism was pursued by Berkeley et al. in the modern period.

Thus, idealism, by virtue of its simplicity, best explains the interactions between subject and object. However, can it account for the material appearance of the world? Yes, quantum physics explains how the elementary particles that make up the world are not material in nature. They are better explained as waves of potential that take on a physical appearance upon observation. Furthermore, the lack of physical matter in the world causes no problems for the philosophical explanation of reality. In fact, matter seems to be unnecessary and reality can be explained better and more directly through mere sensibility. An infinite mind is required for the production of such a sensible world, but this idea works well with quantum physics. There must be a source of the waves of possibilities that physics has discovered and God makes perfect sense as this source. Furthermore, the nature of how a wave function collapses requires both the source

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[305] Mohanty, 386.

[306] Ibid.

[307] Amit Goswami, "Physics within Nondual Consciousness," *Philosophy East And West* 51, no. 4 (October 2001): 535.

and an observer. Perhaps, then, God is continually producing this world for His creation to observe and experience. The psychological studies suggest that this is the case and that God grants a degree of freedom in His subjects based on their conscious efforts. God manifests the proper physical environment for His observers but it is these observers who anticipate certain results. The physical appearance that people experience is best understood as God facilitating an environment that His creation can sensibly experience. An omnipotent God would not need a separate substance to provide this, for He can perform this directly through consciousness. This notion is in agreement with the orthodox interpretation of quantum physics and with orthodox Christianity.

Idealism is mostly a change of perspective, but it makes a tremendous difference as a metaphysical foundational starting point, for upon it much can be built that cannot be founded on materialism. A benefit of a metaphysical reality wherein consciousness is the underlying foundation is that it puts one into a closer relationship with the rest of the world and with God. As Bernard Haisch puts it: "Our minds are filtered from the mind of God. Our thoughts are filtered from the thoughts of God…. Your conscious being is of the very same stuff as God's; your immortal spirit is filtered from God's immortal spirit. Each of us is like one tiny dot of color on a slide of brilliant complexity—and God is the white light of potential out of which we have emerged."[308] In idealism there is no separation between mind and matter that needs to be resolved. In dualism there is a separation between what is spiritual and the physical world that one experiences. This creates a parting from spirituality that is not necessary. For in idealism both aspects can be accounted for in one unified reality in which everything is spiritual.

It is the hope of this project that philosophers will consider more seriously the scientific

[308] Bernard Haisch, *The God Theory: Universes, Zero-Point Fields and What's Behind It All* (San Francisco, CA: Weiser Books, 2006), 31-32.

support of idealism and that scientists will more openly consider the philosophical and experimental support of idealism. It is also a hope that a reader of this project will see the inadequacy of the materialist interpretation of reality as compared to idealism, specifically the materialist idea that the mind is merely an epiphenomenon of the brain and not a real substance. As these scientists are discovering that consciousness plays a major role in physics, they are trying to come up with ways to explain this phenomenon without recognizing that consciousness is a real substance of its own. They attempt to explain emotions such as love and hate as simply chemical processes in a material brain. This is a danger that will only continue to trap scientists in the limiting belief of materialism. Not only does consciousness need to be recognized as metaphysically real, it also needs to be acknowledged that consciousness is necessarily connected to every aspect of reality, rather than viewing it as a substance separate from matter. Bohr argues, "[C]onsciousness, as we know it, is inseparably connected with life."[309] This necessary and inseparable connectedness is what makes the best metaphysical view a monistic one. It can be hypothesized why one would not want to go in this direction. Perhaps the scientist does not want to step out of his or her field into the realm of philosophical arguments about the nature of reality. Also, Schwartz claims, "[T]o suggest that anything other than brain mechanisms in and of themselves constitute the causal dynamics of a mental phenomenon is to risk being dismissed out of hand."[310] He also states, "[T]o pronounce oneself a skeptic on the subject of biological determinism is to court ridicule, to risk being tarred with the brush of 'non-scientific thinking.'"[311] Furthermore, Radin et al. mention that it is safer for one's scientific

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[309] Niels Bohr, *Atomic Theory and the Description of Nature* (New York: The Macmillan Company, 1934), 119.

[310] Schwartz and Begley, 14.

[311] Ibid., 372.

career to avoid the idea that "consciousness may be related to the formation of physical reality."[312] Thus, if it is a risk even to recognize that consciousness is real and not reducible to matter, then how much more of a risk is it to declare that consciousness is all that there is and matter is an epiphenomenon of mind? However, these fears should be cast aside in the pursuit of discovering truth, wherever it may lead, for that is the very purpose of both philosophy and science.

Hopefully this project has demonstrated that idealism can be taken as a probable explanation of reality. Further studies could take this notion from a likely possibility to a more inductively strong argument in favor of idealism. An argument for the existence of God could be given based on quantum physics and Berkeley's arguments for God. Consideration could be given to what form of idealism works best, as well as to specific objections to idealism, addressing why idealism should be favored over dualism. This project was so broad an argument in favor of monistic idealism that it did not leave room to deal with such specific arguments against idealism. There is also much that could be considered as regards what might be derived from the metaphysics of idealism, such as an ethical system. Lastly, someone with expertise in physics that I do not possess could give a deeper analysis and interpretation of the original works of the founders of quantum physics and address the philosophical implications of more recent developments such as the unified field theory, Higgs field, string theory, quantum teleportation and the Higgs boson. A final suggested study would explore the concept of paradox in quantum physics as it relates to that in theology, in particular, Christ's two natures and God's three-in-oneness.

[312] Radin et al., 170.

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