

A Dialogue Between Contemporary Perspectives and Ellen White on Divine Action and Quantum Physics

Michael F. Younker
Ph.D. Student, SDA Theological Seminary
Andrews University

1. Introduction

The way in which God interacts with the world, or divine action, has long been a matter of discussion for theists in the philosophy of science, and continues to remain a complex and controversial topic.¹ In recent decades, this question has taken on additional complexity with advances in contemporary physics, namely quantum physics, which posits a random or probabilistic world in contradistinction to the apparently completely deterministic natural world of Isaac Newton.² Responding to a growing crowd on the periphery of academia that see “God” in the indeterminate

¹ For example, John Polkinghorne, “The Metaphysics of Divine Action,” in *Chaos and Complexity: Scientific Perspectives on Divine Action*, Robert John Russell, Nancey Murphy, and Arthur R. Peacocke, eds., (Vatican Observatory Publications: Vatican City, 1997); Keith Ward, *Divine Action: Examining God’s Role in an Open and Emergent Universe* (Radnor, PA: Templeton Foundation Press, 2007); and Anna Case-Winters, “Rethinking Divine Presence and Activity in World Process,” in Thomas Jay Oord, ed., *Creation Made Free: Open Theology Engaging Science* (Eugene, OR: Pickwick Publications, 2009).

² See *Sir Isaac Newton, Principia: The System of the World, Vol. II*, trans. Motte and Cajori (Berkeley, CA: University of California Press, 1934); see also, Allen A. Sweet, C. Frances Sweet, and Fritz Jaensch, *The Unity of Truth: Solving the Paradox of Science and Religion* (Bloomington, IN: iUniverse, 2012), 71; and Nancy R. Percy, and Charles B. Thaxton, *The Soul of Science: Christian Faith and Natural Philosophy* (Wheaton, IL: Crossway Books, 1994), 132.

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quantum microworld³ (while many atheists allege that quantum randomness or “chance” has replaced the need for any “God”⁴), the evangelical philosopher of science, Lydia Jaeger, shares in a recent work that:

We should avoid the idea of quantum indeterminacy being the privileged place for divine intervention. This idea fails to correctly distinguish between physical and theological categories, and so is unsatisfying as much for the scientist as it is for the believer. Trying to fit divine action into the gaps in the scientific description clearly shows a confusion of primary and secondary causes: God is not an additional causal factor alongside the entities that populate the world. His action is therefore not in competition with the established natural order; it is manifested just as much in his providential sustaining as it is by a miracle, should one occur. Looking for “gaps” in the picture which science gives us, and invoking God to explain them, is more deistic than theistic: A solid understanding of creation allows us to reject any kind of idea of a “God of the gaps.”⁵

Jaeger highlights a key point of contention in the current debates. Is it fair to insert God’s interaction into the world at only the quantum level of indeterminateness? Wouldn’t this be limiting God to a pantheistic relationship with nature, where the cosmos is coeternal with God, who interpenetrates it in some special but limited manner? Or should God’s “intervention” in the world be understood and seen throughout whatever

³ In particular, William G. Pollard, *Chance and Providence* (Nabu Press, 2011, 1923). Though not named by her, see also the more radical pantheistic recent forms advanced by John S. Denker, *The Quantum God: (Why Our Grandchildren Won’t Know Atheism)* (Bloomington, IN: iUniverse, 2010), xx. “A universe with randomness, a non-algorithmic universe, isn’t a universe that just is; it is a universe where God is living. . . . It is where God becomes man and nature,” Ibid. See also, Amit Goswami, *God Is Not Dead: What Quantum Physics Tells Us about Our Origins and How We Should Live* (Charlottesville, VA: Hampton Roads Publishing Company, 2008).

⁴ Russell Stannard, ed., *God for the 21st Century* (Radnor, PA: Templeton Foundation Press, 2000), 147-148. See also, Sam Harris, *The End of Faith: Religion, Terror, and the Future of Reason* (W. W. Norton, 2005), 272-274, n. 7; and David J. Bartholomew, *Uncertain Belief: Is It Rational to Be a Christian?* (Oxford, UK: Clarendon Press Oxford, 1996), 54-55, 185-186.

⁵ Lydia Jaeger, *What the Heavens Declare: Science in the Light of Creation*, trans. Jonathan Vaughan (Eugene, OR: Cascade, 2012), 93.

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the natural world may reveal, including any natural laws which God is sustaining? Jaeger prefers that we take creation *ex nihilo* as the starting point of a discussion on divine action.⁶ In such a picture, God doesn't act *in* nature so much as God's acts *are* what constitute nature. Nature as a whole *is* what God does; nature is not something in which there is a subset *where* God exclusively acts. Correspondingly, for Jaeger, science itself cannot come up with an account of divine action, as only an account of divine action could explain what science *is*. The real question then, for Jaeger, is "how is there room for science in God's world?"⁷ This position, however, moves the issue of the relationship of science and theology into metaphysics entirely, which raises a separate number of issues and problems.

Such a picture as presented above by Jaeger clearly presents the situation that faces the philosopher of science in a different light from those who see "God" only at the quantum level. The purpose of this article is to explore the implications of Jaeger's proposal in dialogue with three other thinkers; namely, the respected contemporary Christian philosophers Alvin Plantinga, John Polkinghorne, and the Seventh-day Adventist thought leader Ellen G. White. The rationale behind the selection of the first two individuals is that they offer comprehensive perspectives on the issue, covering both the major philosophical and theological implications in their own respective works on the issues. Ellen White is included because she offers a surprisingly detailed philosophy of science for a layperson that is influential in Adventist circles, and, although she never knew of quantum physics as such discoveries occurred after her time, she does have several statements that could be interpreted to speak to the issues scientists and philosophers are discovering in the world of contemporary physics.

The objective of the paper is simple in that it will examine, through the above thinkers, if the quantum level of reality *does* hold some sort of value for the Christian philosopher of science, or whether the entire issue is moot. The issues at stake are what, if any, might be the role of the strangeness of

⁶ <http://www.cis.org.uk/conferences/past-conferences/london-2011/>. Accessed April 10, 2012. Lydia Jaeger's talk was entitled "How Does God Act in the World?" See also, <http://graphite.st-edmunds.cam.ac.uk/faraday/Speakers.php>, accessed April 10, 2012, and her talks, "The Idea of Law in Science and Religion," and "The Religious Roots of the Idea of Scientific Laws."

⁷ Jaeger, "How Does God Act in the World?"

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quantum physics (which includes more than just statistical randomness or indeterminacy, such as non-locality, both features that baffled even a scientific luminary like Albert Einstein⁸), if the phenomena are what most physicists say they are, namely, contradictory phenomena to the established picture provided by classical Newtonian natural science which otherwise works very well. Additionally, upon what criteria might we judge or determine what natural law is in relation to the “laws” of logic and mathematics (let alone moral law), which are abstract and not physical or natural, as they are typically understood. Lastly, and separately, where do human free-will and miracles fit into these questions? Attempted solutions to such longstanding puzzles are not the present goal, merely the articulation of where the problems are actually located in the ongoing dialogue. This paper will seek to explore these old but also contemporary questions and the various responses by philosophers, focusing on the above individuals. One major goal of this study will be to highlight the difference between a genuine conceptual mystery (or paradox) and a classical mystery, wherein merely information is missing that prevents a clearer understanding of something assumed true. In other words, the one-hundred trillionth digit of π may be a mystery to mathematicians presently, but we possess the conceptual tools and technology to access it eventually, making this nothing but a classical mystery. A true conceptual mystery is one such that, at least at present, although two or more differing concepts seem true, they are also at surface incompatible. We can’t even imagine what shape a solution might take or be to such apparent problems or seeming contradictions. Such mysteries are often called paradoxes.

⁸ For some primers on the conceptual problems plaguing quantum physics, see John R. Gribbin, *Quantum Physics: A Beginner’s Guide to the Subatomic World* (University of California Press, 2002); Jim Baggott, *The Quantum Story: A History in 40 Moments* (Oxford University Press, 2011); Jim Baggott, *A Beginner’s Guide to Reality* (Pennsylvania State University: Pegasus Books, 2006); Franco Selleri, *Quantum Paradoxes and Physical Reality* (Dordrecht, The Netherlands: Kluwer Academic Publishers, 1990); Euan J. Squires, *The Mystery of the Quantum World* (New York, NY: Taylor & Francis Group, 1994); and Miguel Ferrero and Alwyn van der Merwe, ed., *Fundamental Problems in Quantum Physics* (Dordrecht, The Netherlands: Kluwer Academic Publishers, 1995).

2. The Relationship Between Philosophy, Theology, and Classical Science

In this section, I'm first going to briefly recount the basic attitudes toward science which have formed our modern conceptions of the issue. This is necessary as a reminder of the general attitudes that frame the discussion even today. Then in section three I will highlight how precisely Jaeger, Polkinghorne, Plantinga, and White discuss the relationship between theology and natural science, with an emphasis on the theoretical aspects of the issue and how quantum physics fits in their respective views. Through this process I will compare and contrast their views to highlight the role of quantum physics in the development of their beliefs, and the implications of what problems, if any, they see quantum phenomena helping them explain or resolve.

Common Perception of Natural Science's Relationship to Philosophy

Following a generation behind the advances of the eminent scientist Isaac Newton (1642-1726) and philosopher René Descartes (1596-1650), the words of Pierre-Simon de Laplace, Immanuel Kant, and Lord Kelvin will help to create the contemporary picture of the modern expectations of science that greets us today. Although most contemporary scientists realize there are many complexities concerning the situation, these ideas nevertheless still dominate the picture that "science" paints for itself for society at large. I retrace the thinking behind this picture to provide some background that will illuminate how our above selected thinkers, Jaeger, Polkinghorne, Plantinga, and White, will engage the issues.

The mathematician and scientist Laplace (1749-1827) presents perhaps the most well-known remarks on the determinism of the natural world based upon the assumption of an atomistic closed natural universe with consistent causal laws and behavior. He stated, "If you could only tell me the motion and position of every particle in the universe at any time in the past, then I would be able if I knew all of the laws of nature to tell exactly what would happen in all detail at all future time."⁹ Similarly, he also asserted, "The present state of the system of nature is evidently a consequence of what it was in the preceding moment, and if we conceive of an intelligence which at a given instant comprehends all the relations of

⁹ Darin Jewell, *Thinking About Thinking* (Bloomington, IN: AuthorHouse, 2005), 134.

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the entities of this universe, it could state the respective position, motions, and general effects of all these entities at any time in the past or future.”¹⁰ As such, all of reality could be calculated, easily enough, were one to simply possess a sufficient mind that had the appropriate knowledge. Just a moment’s observation or brief time-delayed snapshot of the universe would provide all the necessary data to calculate the universe for all times.

Interestingly, Laplace was also noted for his work on theories of probability. One might wonder how to reconcile the puzzle of a chief proponent of determinism in natural science advocating mere probability? The answer is simple, and he shared it as such. As Darin Jewell explains Laplace’s position, “in celestial mechanics [where Laplace first focused his attention] there are just a few laws, we know them, and we can make the calculations. Ordinary, daily events such as the descent of a feather from the Tower of Pisa or human actions are much more complex.” As such, “they are no different in principle, but it is just so much harder to know the laws which apply, and we do not know them nearly as well as we know the laws of celestial mechanics.”¹¹ It is simply a matter of knowing all the appropriate laws, which are surely a great number. Accordingly, in Laplace’s own words, “everything in nature obeys these general laws; everything derives from them by necessity and with as much regularity as the cycle of seasons. The path followed by a light atom that the winds seem to transport at random, is ruled in as certain a manner as the planetary orbits.”¹² Laplace remained optimistic that future scientific discoveries would reveal more laws that would resolve the indeterminacies that the science of his time faced. “Several experiments already made give us reason to hope that, one day, these laws will be perfectly known; then by applying mathematics, we will be able to raise the physics of terrestrial bodies to the same degree of perfection that the discovery of universal gravitation has given to celestial physics.”¹³ It is in this context that Laplace then reiterates:

Man owes that advantage [in celestial mechanics] to the power of the instrument he employs, and to the small number of relations that [this

¹⁰ Laplace, as cited in *Ibid.*

¹¹ *Ibid.*, 135.

¹² *Ibid.*

¹³ *Ibid.*

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field] embraces in its calculations. But ignorance of the different causes involved in the production of events, as well as their complexity, taken together with the imperfection of analysis, prevents our reaching the same certainty about the vast majority of phenomena. Thus there are things that are uncertain for us, things more or less probable, and we seek to compensate for the impossibility of knowing them by determining their different degrees of likelihood. So it is that we owe to the weakness of the human mind one of the most delicate and ingenious of mathematical theories, the science of chance or probability.”¹⁴

Jewell believes that this view of Laplace’s is the one that still holds today for most scientists, and that “the necessity to make probabilistic calculations does not mean the world is not deterministic, but only means it is probably complex and that we do not know enough to realize the underlying interconnectedness as yet.”¹⁵ Jewell realizes the implications this has for human freedom and responsibility, in that a pure determinism would remove the human entity from being utterly responsible for his actions as they were predetermined, while, conversely, a purely random universe would mean there could be no continuity of the self, or inheritance of responsibility from moment to moment.¹⁶ All of the issues Laplace and Jewell raised will continue to play key issues in the development of quantum physics, including, in particular, his attitude concerning the relationship between probability and determinism being governed by ignorance.

The highly influential contemporary of Laplace, the philosopher Immanuel Kant (1724-1804), shared much of Laplace’s confidence in the rational certainty of reality, including its mathematical relationship to

¹⁴ Ibid., 135-136.

¹⁵ Ibid., 136.

¹⁶ Jewell comments, “I think we do need to honor this powerful intuition we have that at moments of moral import we could have done something else. The issue is not really free will versus determinism. That is only part of the problem. The issue is free will in the sense of us being responsible for our own actions versus any theory that would free us of that responsibility. It is just that determinism historically in the West is the classic theory that would seemingly free us of that responsibility by claiming that our causes are determined by laws. Yet the opposite position, that we live in an absolutely random universe whose randomness is so profound like coin-tossing that we in fact by the interposition of our moral self cannot alter it, would free us just as much from responsibility and therefore is just as strong a counter to our sense of free will,” Ibid.

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nature and metaphysics. Kant argued that in the development of the entirety of a transcendental philosophy which necessarily precedes all metaphysics, it must be assumed that:

We can only appeal to two sciences of theoretical cognition (which alone is under consideration here), pure mathematics and pure natural science (physics). For these alone can exhibit to us objects in a definite and actualisable form (*in der Anschauung*), and consequently (if there should occur in them a cognition *a priori*) can show the truth or conformity of the cognition to the object *in concreto*, that is, its actuality, from which we could proceed to the reason of its possibility by the analytic method.¹⁷

Kant clearly held a special place for mathematics and physics in the establishment of the ground for a theoretical understanding of reason and the possibility of a metaphysics. As human freedom was contained within the discipline of metaphysics for Kant, this would encourage his later fellow philosopher Martin Heidegger to remark with dismay that “for Kant . . . genuine metaphysics remains an ontic science of supersensible beings. For him ‘the supersensible’ is ‘the final goal of metaphysics’—supersensible in us, above us, and after us, namely: freedom, God, and immortality.”¹⁸ Given that “the mathematical sciences of nature are precisely what became and remained for Kant the model of science as such,”¹⁹ one can see the tight correlation between mathematics and nature and any metaphysical inquiry. This meant the issues of freedom, God, and immortality were governed by the same rational tools and rules that were determined and applied to and by mathematics. Intelligibility itself, as metaphysics, required these components to work within the specified pattern of mathematical natural science’s clarity. This required Kant to ultimately place freedom outside the evidently deterministic noumenal material world of empirical natural science, to a timeless world beyond from where we experience the world

¹⁷ Immanuel Kant, *Kant’s Prolegomena to Any Future Metaphysics*, tr. Paul Carus (Kessinger Publishing, 2005), 30.

¹⁸ Martin Heidegger, *Phenomenological Interpretation of Kant’s ‘Critique of Pure Reason’*, tr. Parvis Emad and Kenneth Maly (Bloomington, IN: Indiana University Press, 1997), 11.

¹⁹ *Ibid.*, 20.

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as phenomena, through our mind or soul, a distinct noumenal thing in itself,²⁰ an intricate dualism.

To briefly encapsulate their thoughts thus far, Kant and Laplace have placed the deterministic law-like behavior of nature in a close relationship with the calculability made possible by mathematics. Furthermore, Kant takes this mathematical calculability as the model for genuine knowledge as such, a pattern that will be continued in the development of science, as will be noted below.

Another one of the famed father's of modern science, Lord Kelvin (William Thomson, 1824-1907) also described very concisely the preponderant attitudes that many scientists today still assume:

When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind. It may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the state of *science*, whatever the matter might be.²¹

The above words also led him to assert that "I am never content until I have constructed a mechanical model of the subject I am studying. If I succeed in making one, I understand; otherwise I don't."²² Kelvin also famously

²⁰ As Martin Gardner explains, "Kant's view can be compressed as follows: In the space-time world of our experience, the world investigated by science, causal determinism must be assumed; in this sense the will is not free. But morality is meaningless unless the will *is* somehow free. For practical reasons, therefore, we must assume that the human soul, considered as a noumenon, a thing in itself, belongs to a transcendent, timeless realm, and in this realm it is truly free. How empirical determinism and noumenal freedom can be reconciled, however, is a mystery utterly beyond our finite minds," *The Whys of a Philosophical Scrivener* (New York, NY: St. Martin's Press, 1999), 413, n. 8. This has caused problems for contemporary thinkers. As Ted Peters observes, "It has been traditionally assumed that history belongs peculiarly to the human condition and that nature functions in some achronic realm, subject to unchanging laws. What is beginning to dawn on modern consciousness is the comprehensiveness of the category history. Nature, too, is historical. It is not timeless," Ted Peters, *Science, Theology, and Ethics* (Burlington, VT: Ashgate Publishing Limited, 2003), 114.

²¹ Thomas Dietz and Linda Kalof, *Introduction to Social Statistics: The Logic of Statistical Reasoning* (West Sussex, UK: Blackwell Publishing, 2009), 36.

²² Aleksandre Tikhonovich Filippov, *The Versatile Soliton* (Rensselaer, NY: Birkäuser, 2000), 8.

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quipped, “in science there are no paradoxes,”²³ and “mathematics is the only good metaphysics.”²⁴ Interestingly, however, Kelvin also stated paradoxically that “every action of human free will is a miracle to physical, and chemical, and mathematical science.”²⁵ Were this assumed true, he would have inherited the Kantian gap or Cartesian split between the human mind/soul and the natural world that is represented by a crisp divide. Such divisions create a multitude of paradoxes and contradictions to common sense. This issue is one that our selected philosophers will engage later.

It was in fact René Descartes, through his infamous “Cartesian dualism,” that had set the stage for much of modern thinking. Michael Spenard explains that “Descartes concluded that since the entire existence of the body could be doubted, and since the mind could not doubt its own existence . . . , then the mind must be of a nonphysical substance.”²⁶ From this, the person was bifurcated into two substances, the body, which was “governed by mechanical clockwork-like laws of physics,” and the mind, which was not bound to such rules.²⁷ Nevertheless, mathematics still played a key and fundamental role in both motivating and describing what was possible in either domain, remaining the standard for clarity to be sought. Thus, Heidegger summarizes Descartes’ views as follows:

Did not Descartes, who determined the fundamental orientation of modern philosophy, want nothing other than to furnish philosophical truth with the character of mathematical truth and wrest mankind from doubt and unclarity? From Leibniz the saying has been handed down: Without

²³ Carl C. Gaither and Alma E. Cavazos-Gaither, *Scientifically Speaking: A Dictionary of Quotations, Vol. 1* (Bristol, UK: IOP Publishing Ltd., 2000), 144. Several quotations on paradoxes are included here.

²⁴ Carl C. Gaither and Alma E. Cavazos-Gaither, eds., *Gaither’s Dictionary of Scientific Quotations*, 2nd ed. (New York, NY: Springer, 2012), 1139.

²⁵ John Henry Bridges, *Illustrations of Positivism: A Selection of Articles from the ‘Positivist Review’ in Science, Philosophy, Religion, and Politics* (Ayer Publishing, 1915), 20, 23. As Bridges notes, “From a great scientific authority . . . these remarks are so curiously wanting,” 23. Kelvin’s comment here severely undercuts his previous remarks on the primacy of science.

²⁶ Michael Spenard, *Dueling with Dualism: The Forlorn Quest for the Immaterial Mind* (Unpublished, 2011), 10.

²⁷ *Ibid.* See also, Richard A. Watson, *The Breakdown of Cartesian Metaphysics* (Humanities Press International, 1998), 181-186; and Kevin Corcoran, ed., *Soul, Body, and Survival: Essays on the Metaphysics of Human Persons* (Cornell University Press, 2001).

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mathematics one cannot penetrate into the ground of metaphysics. This is surely the most profound and sweeping confirmation of what is proposed straightaway and for everyone as absolute truth in philosophy.²⁸

Of course, as Richard Watson notes, in many respects Cartesian dualism failed to adequately address many concerns that philosophers had on how the body and mind could interact, namely how the mind could cause physical actions. In particular, the agnostic empiricists, such as John Locke and David Hume, abandoned many of Descartes' rationalist views.²⁹ They did not, however, remove the mathematization of reality from empirical natural science.³⁰ Mathematical natural science rather came to provide the softening of empiricism and rationalism's extremes in the eyes of contemporary thinkers, which remains very much true today, by and large.³¹ Furthermore, it must be noted that many Christians still retain aspects of Cartesian substance dualism owing to their views on the human soul.³²

²⁸ Martin Heidegger, *The Fundamental Concepts of Metaphysics: World, Finitude, Solitude*, tr. William McNeill and Nicholas Walker (Bloomington, IN: Indiana University Press, 1995), 16. Originally, "Descartes, der die Grundhaltung der neuzeitlichen Philosophie bestimmte, was wollte er anderes, als der philosophischen Wahrheit den Charakter der mathematischen zu verschaffen und die Menschheit dem Zweifel und der Unklarheit zu entreißen? Von Leibniz ist das Wort überliefert: Sans les mathématiques on ne pénètre point au fond de la Metaphysique. . . . Das ist doch die tiefste und umfassendste Bestätigung dessen, was man ohnehin für jedermann als absolute Wahrheit in der Philosophie ansetzt." Martin Heidegger, *Die Grundbegriffe der Metaphysik. Welt-Endlichkeit-Einsamkeit* (Frankfurt am Main, Deutschland: Vittorio Klostermann, 1983), 23-24.

²⁹ Watson, *The Breakdown of Cartesian Metaphysics*, 149.

³⁰ "Kepler and Galileo, two of the founders of modern science, believed with Plato that God worked according to mathematical models when creating the world. . . . Kepler and Galileo . . . put forward a mathematical empiricism" that would not be dissuaded from its dominance over science by any later generation, R. Hooykaas, *Religion and the Rise of Modern Science*, (Edinburgh, UK: Scottish Academic Press, 1972), 35.

³¹ "It was not until science emerged in the 16th century that rationalism and empiricism were wed and sensory information provided that which was reasoned about. Science therefore minimized the extremes of both rationalism and empiricism," B. R. Hergenhahn, *An Introduction to the History of Psychology* (Belmont, CA: Wadsworth, 2009), 34.

³² Note for example, Garrett J. DeWeese and J. P. Moreland, *Philosophy Made Slightly Less Difficult: A Beginner's Guide to Life's Big Questions* (Downers Grove, IL: InterVarsity Press, 2005), 105-116; and Garrett J. DeWeese, *Doing Philosophy as a Christian* (Downers Grove, IL: InterVarsity Press, 2011), 220-243.

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Partial Summary

From the above sample of classical scientists and philosophers, it is clear that a closed, deterministic mathematical empiricism/rationalism, and its accompanying clarity, played a key role in establishing the conceptual limits of what could be called science. Science here should be understood as both the method of attaining knowledge in general, as well as how such knowledge could be derived from the natural world and its evidently intrinsically deterministic nature which was expressed mathematically, which corresponded to the received view that metaphysics was essentially mathematical in nature. Both scientists and philosophers cooperated in developing this view. Suffice it to say, it appeared self-evident from the evidence. Only the quantum revolution has finally discovered some conceptual cracks in the received deterministic view of the natural world.³³

3. Quantum Science and Theology

In this section, I will examine the selected quantum-aware Christian philosophers, in addition to Ellen White, who was not, to see how they handle the issue of science and theology in light of the quantum paradoxes or mysteries in nature.

Lydia Jaeger

Jaeger's perspective on science, which she acknowledges follows alongside the "sphere sovereignty" of the Dutch Christian philosopher Herman Dooyeweerd's philosophy of science,³⁴ aims to create distinct separations between different "aspects," "spheres," or "modalities" of reality (ethics, mathematics, kinetics, biological, lingual, spatiality, etc.) that are irreducible to each other as part of a complex multidimensional

³³ Sweet, *The Unity of Truth*, 72. "Quantum mechanics changed everything! With the development of quantum mechanics during the mid-twentieth century, determinism's stranglehold on the minds and hearts of scientists began to relax. Although the genesis of quantum mechanics lay in the desire of scientists to better understand the interactions of matter and energy at the subatomic level, the philosophical fallout from its development was destined to question all the assumptions of determinism," Ibid.

³⁴ Jaeger, "The Idea of Law in Science and Religion."

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reality.³⁵ Perhaps the quickest way to grasp the significance of this is to observe how some Dooyeweerdians resolved one of the oldest philosophical paradoxes, that of Zeno's race between Achilles and the tortoise, and its parallel, the flying arrow that reaches its target. These paradoxes of motion and mathematics, for example the arrow that could never cross a specified distance because it would have to first cross over an infinite number of "steps" (dividing the distance by 2 infinitely, or *ad infinitum*), represent an apparent contradiction that we nevertheless know to be true from common sense experience. Mathematicians puzzled over them for millennia, and still do. The arrow does evidently traverse the distance!

For Dooyeweerd, the paradoxes of motion represented a violation of separate law-spheres, namely kinetics and spatiality. As Ronald Nash, both sympathetic and also highly critical of Dooyeweerd, explains on his behalf, "when the important truth of the sovereignty of the spheres is ignored, contradiction or *antinomies* are certain to arise."³⁶ As such, "the famous antinomies of Zeno . . . are the result of an attempt to reduce the aspect of motion to that of space." Furthermore, as J. M. Spier shares from Dooyeweerd's perspective, "if a scientist is confronted by two mutually contradictory laws, he can be certain that he has violated a modal [aspectual] boundary and has disregarded the principle of sphere sovereignty. . . . The scientist can never be confronted by intrinsic contradictions. Such contradictions can be avoided if a scientist strictly observes the laws applicable in his particular field of investigation."³⁷ Of course, most philosophers and mathematicians throughout history haven't seen the problem as one that should be simply ignored, and have sought various ways to resolve Zeno's paradoxes with differing levels of success,

³⁵ For a brief overview of the Dooyeweerdian perspective, see Roy A. Clouser, "A Sketch of Dooyeweerd's Philosophy of Science" in J. M. van der Meer, ed., *Facets of Faith and Science Vol. 2: The Role of Beliefs in Mathematics and the Natural Sciences: An Augustinian Perspective* (Lanham: The Pascal Centre for Advanced Studies in Faith and Science/University Press of America, 1996).

³⁶ Ronald Nash, *Dooyeweerd and the Amsterdam Philosophy* (Grand Rapids, MI: Zondervan Publishing House, 1962), 33.

³⁷ J. M. Spier, *Christian Philosophy*, 50, as cited in Nash, *Dooyeweerd and the Amsterdam Philosophy*, 33.

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depending on one's point of view concerning the proffered solutions from differential calculus and their application to nature.³⁸

Concerning the natural world, Jaeger concurs with virtually all scientists that it is the “‘law’-like regularity and consequent modelability of natural phenomena [that] are the unquestioned assumptions that underlie all scientific research.”³⁹ Indeed, “common to all except for the most extreme relativists is the conviction that there is some basic, deep order in Nature that allows for the emergence of meaningful scientific practice.” For, “if Nature were a completely chaotic aggregate, no comprehensible mathematical description of Cosmic Order would be possible,”⁴⁰ but seemingly it is. Jaeger emphasizes this for even the quantum level of reality, something which is very much disputed.⁴¹ Accordingly, despite objections from many physicists (of whom, it must be noted, Jaeger herself has done studies in physics), Jaeger insists that although “quantum mechanics has introduced chance at the most basic level of our physical theories,” it remains nevertheless that “quantum probabilities are themselves described by precise mathematical formulae. Quantum theory does not transport us into the daunting world of magic where just anything can happen. It is part of the deep order of Nature that science has been able to partially comprehend,”⁴² at least presently. She expresses optimism for

³⁸ Some do not believe the paradox has been properly resolved. E.g., Trish Glazebrook, “Zeno Against Mathematical Physics,” *Journal of the History of Ideas*, Vol. 62, No. 2 (April 2001), 193-210. Glazebrook concludes, “mathematical descriptions of physical reality fail, as apparent from the paradoxical results they engender,” *Ibid.*, 209.

³⁹ Lydia Jaeger, “Cosmic Order and Divine Word,” in Charles L. Harper, ed., *Spiritual Information: 100 Perspectives on Science and Religion* (West Conshohocken, PA: Templeton Foundation Press, 2005), 151.

⁴⁰ *Ibid.*

⁴¹ Lydia Jaeger, “Laws of Nature,” in *The Blackwell Companion to Science and Christianity*, ed. J. B. Stump and Alan G. Padgett (West Sussex, UK: Blackwell Publishing, 2012), 459. Jaeger shares her belief that “the strangeness of the microscopic world does not point to a limit that mathematical description might encounter,” *Ibid.* However, other philosophers working with quantum phenomena suggest that a “new” mathematics *is* needed to approximate quantum phenomena, if one is even possible at all. E.g., Paavo Pyllkkänen, *Mind, Matter and the Implicate Order* (Berlin, Germany: Springer-Verlag, 2007), 66; Pauli Pyllkkö, *The Aconceptual Mind: Heideggerian Themes in Holistic Naturalism* (Amsterdam, The Netherlands: John Benjamins Publishing Co, 1998), 42, 69, 86, 133.

⁴² Jaeger, “Cosmic Order and Divine Word,” 151.

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“the development of a probability-free version of quantum mechanics.”⁴³ Nevertheless, from her view that creation was created by God contingently and does not derive from God’s own *nature*, she claims that we should remain “agnostic about the deterministic (or indeterministic) nature of the world.”⁴⁴

On the one hand, Jaeger’s perspective appears to be allowing God to be God, and nature to be nature. This much appears laudable. Where this becomes particularly problematic conceptually, however, is when she then asserts that “we should not look for accounts of human freedom and moral responsibility solely in terms provided by natural science,”⁴⁵ as the “achievements of science should not lure us into thinking that the natural sciences, and in particular physics, are the paradigm that should guide explorations of all reality.”⁴⁶ Jaeger rejects, correctly from my perspective, any view that seeks to understand God’s moral nature from the natural world. Rather, “If we decipher God’s handwriting in Cosmic Order, we may instead come to realize that the encounter between two persons can be a more sublime mode of knowledge than the encounter of persons with inanimate matter and forces. It is here in the personal dimension that the human subject most fully interacts with reality.”⁴⁷

What the above sentiment by Jaeger leaves open, however, is the inevitable conflict between science and religion. If we don’t or can’t begin to investigate questions that pertain, for example, to human freedom (noteworthy is the fact that at least in the above citation, she uses the word *solely*), then we will inevitably slide into dichotomies in reality covering domains that impinge upon each other that are of even greater mutual interest and application than Zeno’s paradoxes. Where this is most pertinent is when it comes to actually discussing matters that pertain to both Scripture and nature. Scripture and nature cannot conflict about, for example, a recent literal six-day creation because they are separate spheres for Jaeger⁴⁸ and many other Dooyeweerdian thinkers. This is because they utilize the “sphere sovereignty” scheme, which doesn’t allow the Scriptures

⁴³ Jaeger, “Laws of Nature,” 459.

⁴⁴ Ibid.

⁴⁵ Jaeger, “Cosmic Order and Divine Word,” 154.

⁴⁶ Ibid., 153-154.

⁴⁷ Ibid.

⁴⁸ Jaeger, *What the Heavens Declare*, xv, 3 n. 5.

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or Word of God, which is part of the sphere of faith, to impinge upon the natural world and its historical-scientific interpretations. If science says life has evolved for long ages, the Word of God doesn't speak to this, because its purpose is to reveal matters of faith only.⁴⁹ Indeed, as Ronald Nash strongly criticizes, many who follow Dooyeweerdian or Jaeger's style of thinking believe that Scripture is not really meant to be the origin of propositional truth,⁵⁰ or, to put it another way, an understanding of truth⁵¹

⁴⁹ John M. Frame, *The Amsterdam Philosophy: A Preliminary Critique* (Presbyterian & Reformed Publishing, 1973), 28. Owing to the importance of their modalities, "even without explicitly denying biblical authority, it is possible for an Amsterdam philosopher to evade biblical authority by adopting principles of interpretation which distort the plain meaning of the Bible. Dooyeweerd, for example, argues that the 'six days' of Genesis 1 must have nothing to do with astronomical or geological concepts of time, since Scripture is concerned directly only with the faith aspect," 28.

⁵⁰ Ronald Nash, *The Word of God and the Mind of Man* (Phillipsburg, NJ: P&R Publishing, 1982), 96-97, 122-123; c.f. Albert Wolters, "Dutch Neo-Calvinism: Worldview, Philosophy and Rationality," in *Rationality in the Calvinian Tradition*, Hendrick Hart, Johan Van der Hoeven, and Nicholas Wolterstorff, eds. (Lanham, MD: University Press of America, 1983), 126-127.

⁵¹ As a matter of explanation, "Logically the most basic notion of truth in any realm whatsoever is propositional truth," mirroring the clarity of mathematics. Harold Netland, *Encountering Religious Pluralism: The Challenge to Christian Faith & Mission* (Downers Grove, IL: InterVarsity Press, 2001), 203. C.f., Francis A. Schaeffer, who compares propositional truth to mathematical truth, before he tries to elucidate a nuanced difference: "In speaking of the Bible's statements as propositional truth, we are *not* saying that all communication is on the level of mathematical formula," Francis A. Schaeffer, *The Complete Works of Francis A. Schaeffer: A Christian View of the Bible as Truth*, Vol. 2 (Wheaton, IL: Crossway Books, 1982), 141. The point is not that propositional truth and mathematical formulae are the same, but rather that their clarity is comparable, and their applicability compatible to a given problem within their respective domains. As John MacArthur observes of the postmodern situation concerning propositional truths, "we often encounter people enthralled with postmodern ideas who argue vehemently that truth cannot be expressed in bare propositions like mathematical formulae. Even some professing Christians nowadays argue along these lines: 'If truth is personal, it cannot be propositional. If truth is embodied in the person of Christ, then the form of a proposition can't possibly express authentic truth. That is why most of Scripture is told to us in narrative form—as a story—not as a set of propositions.'

"The reason behind postmodernism's contempt for propositional truth is not difficult to understand. A proposition *is an idea framed as a logical statement that affirms or denies something, and it is expressed in such a way that it must be either true or false*. There is no third option between true and false. (This is the 'excluded middle' in logic.) The whole point of a proposition is to boil a truth-statement down to such pristine clarity that it must

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that derives from Scripture that is conceived as analogically mathematical can't be applied to some other sphere, like actual mathematical natural science. Language, and the truth it represents, can't have clear, precise meanings that would apply to two separate spheres such that one of the spheres might be violated. And, in many cases, their version of grasping the truth of things like human freedom, and even God, are not simply to insist that natural science cannot pierce these issues, but to further advance the notion that *rationality itself* is inherently creaturely, and thus God and spiritual issues like human freedom which are reflected from the *imago dei*, are simply incomprehensible or "irrational."⁵² It seems that their commitment to make sense of the natural world through mathematics means that they can't make sense of things like human freedom or God. As I will share later, this is unfortunate, though expected, if one adheres too much to the mathematical and orderly conception of nature and maintains too strict of a standard or ideal for sphere sovereignty, insisting that quantum phenomena are merely another part of the mathematical-natural order.

The above holds true for any miracle, which "by definition," as Jaeger explains, "escapes any scientific account."⁵³ For her, the same holds true for humans and their rationality and freedom, "which cannot be described by any object."⁵⁴ Jaeger is quite content to let science be mathematics, and miracles be "irrational" intrusions or nonscientific outworkings or suspensions of the *natural* law order, as they occur at a higher divine law order that is, *prima facie*, incommensurate with the natural scientific attitude. This is what she considers the obvious result of the belief that if one starts with a "world without physical objects," then it follows that "no scientific understanding of God can be achieved," yet the natural order is

be either affirmed or denied. In other words, propositions are the simplest expressions of truth value used to express the substance of what we believe. Postmodernism, frankly, cannot endure that kind of stark clarity," John MacArthur, *The Truth War: Fighting for Certainty in an Age of Deception* (Nashville, TN: Thomas Nelson, 2007), 14.

⁵² Wolters, "Dutch Neo-Calvinism," 126-127. For such thinkers, "If rationality is *creature*, and there is no creaturely principle of continuity between the Maker and the made, then rationality disqualifies as that principle. There is no rational order that encompasses Creator and creation—not because the Creator is irrational, but because rationality is creature," Ibid.

⁵³ Jaeger, "How Does God Act in the World?"

⁵⁴ Ibid.

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theoretically perfectly understandable in scientific terms, including even the quantum level, which does not provide insight into a different aspectual sphere or modality beyond the realm of mathematical physics.⁵⁵

Of course, Jaeger doesn't believe that the laws of nature are necessarily causally closed, meaning God can intrude when he wants, as "the whole universe serves God's law,"⁵⁶ as expressed through the various spheres. Rather, there are, corresponding to the different spheres of sovereignty, different laws for different spheres. Some of these laws, like those governing human freedom, perhaps, are simply not scientific or mathematical. Again, at the surface, this sounds laudable. It is the consequences of this view that are the challenge, because they present *prima facie* contradictions when, for example, we study neuroscience looking for evidence of human freedom. Unfortunately, because of the principle of sphere sovereignty, other kinds of problems that relate to the historicity and accounts of Scripture can also potentially fall by the wayside, as Scripture's purpose is to deal with the laws of faith, not science. The separation is categorical. I will provide a further ongoing critique of her views, noting both their strengths and weaknesses, on divine action below where pertinent as I explore alternate perspectives.

John Polkinghorne and Alvin Plantinga

Both Plantinga⁵⁷ and Polkinghorne⁵⁸ treat quantum phenomena and their relationship to issues in science and theology extensively. In contrast to Jaeger, both of their perspectives aim to more productively utilize quantum phenomena for the purpose of finding explanatory analogies to traditional problems that Christians have faced in both natural philosophy and theology.

Polkinghorne, both a trained scientist and theologian, is somewhat more troubled by the conceptual challenges of quantum phenomena than

⁵⁵ Ibid.

⁵⁶ Jaeger, "Laws of Nature," 455.

⁵⁷ Alvin Plantinga, *Where the Conflict Really Lies: Science, Religion, & Naturalism* (Oxford University Press, 2011), especially chapter 4, "The New Picture," 91-128

⁵⁸ John Polkinghorne, *Quantum Physics and Theology: An Unexpected Kinship* (Yale University Press, 2007).

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Jaeger appears to be.⁵⁹ For him, “there is no question that quantum physics has turned out to be probabilistic,” and that “quantum physics implied the illusory character of the dream that Laplace had entertained” of a fully calculable reality.⁶⁰ However, he sees this as a good thing, not something to be lamented. Rather, “living with unresolved paradox” may “not be a comfortable situation. . . , yet it is not an unfamiliar state for” Christians.⁶¹ Polkinghorne considers the possibility that the divine/human duality of Christ appears conceptually analogous to the quantum particle/wave duality, for example.⁶² He sees this as also helpful for the conceptual challenges in the trinity.⁶³ They both clearly and evidently do coexist, and we can phenomenally see this in the text of Scripture and Christian tradition, yet we can’t explain it, except through one lense or the other. It must be noted that Polkinghorne is not intentionally creating a paradox theology, though he is aware that it can point that way if read incorrectly.⁶⁴ Nevertheless, Polkinghorne sees a great degree of similarity on how

⁵⁹ Ibid., 69. Polkinghorne acknowledges that following “more than eighty years after the initial discovery of modern quantum theory, it is embarrassing to have to admit that there is no comprehensive and universally agreed answer to that reasonable question” concerning the commensurability between the classical and quantum theories, Ibid. Not only are there problems with the microscopic theory, but the macroscopic and microscopic theories themselves “do not fit together,” 70.

⁶⁰ John Polkinghorne, *Science and Religion in Quest of Truth* (Yale University Press, 2011), 36.

⁶¹ Polkinghorne, *Quantum Physics and Theology: An Unexpected Kinship*, 90.

⁶² Ibid., 90-93. “Perhaps theology can take heart from this example of quantum thinking,” 92. “It is worth understanding in a little more detail how quantum field theory reconciles the apparent opposites of wave and particle behavior. This possibility is found to result from the fact that state corresponding to wave-like properties contain an indefinite number of particles. This is a property that Newtonian physics, of course, could not accommodate, for in its clear and determinate formulation there would simply be a specific number of particles present (just look and count them) and that would be that. In quantum theory, however, the superposition principle allows the addition of possibilities that classical physics would hold strictly apart, so that a state can be composed of a mixture of different particle numbers, with no fixed and definite number present. It is the ontological flexibility of the quantum world, whose description in terms of wavefunctions expresses present potentiality rather than persistent actuality (consequently incorporating an element of intrinsic indefiniteness into its account), that dissolves the paradox of wave/particle duality,” 92.

⁶³ Ibid., 102-103.

⁶⁴ Ibid., ix.

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theology and science have approached their respective problems, and that similarity reaches especially fruitful comparison in contemporary quantum theory.⁶⁵

When it comes to the epistemological attitude that the scientist-theologian should have, perhaps Polkinghorne's most helpful admission is that:

A just account of science lies, in fact, somewhere between the two extremes of a modernist belief in a direct and unproblematic access to clear and certain physical ideas, and a postmodernist indulgence in the notion of an à la carte physics. The intertwining of theory and experiment, inextricably linked by the need to interpret experimental data, does indeed imply that there is an unavoidable degree of circularity involved in scientific reasoning. This means that the nature of science is something more subtle and rationally delicate than simply ineluctable deduction from unquestionable fact. A degree of intellectual daring is required, which means that ultimately the aspiration to write about the *logic* of scientific discovery proves to be a misplaced ambition.⁶⁶

Polkinghorne's comments put much of the confidence of previous scientists in their place, recognizing appropriately the restraints that a balanced mix of modern and postmodern thinking places on an individual in every endeavor. This insight, while derivable from standard science and advances in philosophy, is also forced in particular by the conceptual challenges with quantum phenomena. One can easily imagine many more apparent dualisms or dichotomies that Christians struggle with; for example, we are saved by faith, but judged by works. This is similar to quantum phenomena, wherein, it could honestly be said, as of a particle or works, that it "isn't here" that you are saved. Yet, simultaneously, representing the wave which is always present yet not something with a "particle" location, you are judged by works. The analogies could continue, including even possibly for such historically intractable problems as divine foreknowledge and human freedom.

⁶⁵ See also, John C. Polkinghorne, *Belief in God in an Age of Science* (Yale University Press, 1998), chapter 2.

⁶⁶ Polkinghorne, *Quantum Physics and Theology: An Unexpected Kinship*, 5.

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Of course, there are also what I would consider many problems with Polkinghorne's overall theology, in particular his inability to articulate a solid Scriptural hermeneutics. How the Word of God functions in his theological and scientific methodologies is not well defined. Like the Dooyeweerdians, of which Jaeger is one, there is too little emphasis, or rather a complete lack of effort, on applying the conceptual difficulties of quantum phenomena to Scripture itself, wherein there are clearly revealed truths (propositional), yet the subtleties and nuances of how such things are true (e.g., Creation) are left unexplained. Polkinghorne feels obligated to let science be science to a great extent in reaching across the aisle from the insights of atheistic scientists into Scripture as much as possible in articulating how the universe has evolved.⁶⁷ Were Polkinghorne able to take the physicist Richard Feynman's advice, which he cites, and apply it for Scripture, it might help us to grapple with propositional truth in a world of science:

We choose to examine a phenomenon which is impossible, *absolutely* impossible, to explain in any classical way, and which has in it the heart of quantum mechanics. In reality it contains the *only* mystery. We cannot make the mystery go away by 'explaining' how it works. We will just *tell* you how it works.⁶⁸

Imagine the above approach, combined with Polkinghorne's intellectual daring as mentioned above, when applied to Creation in Scripture. There may remain a mystery, even a fantastic mystery, concerning how Creation took place, preventing any *explanation*, yet easily enough one can *tell* what happened after the fact through Scripture's propositional claims.

Naturally, one of the major conceptual problems that Christian scientists have to deal with are miracles. Both Polkinghorne and Plantinga offer a different take on this issue than Jaeger provides, and is one that I think warrants further attention. It should be noted that Polkinghorne also believes that "it is very unlikely that either human agency or divine

⁶⁷ See <http://www.timesonline.co.uk/tol/comment/faith/article4790446.ece>, accessed April 10, 2012; Polkinghorne, *Science and Religion in Quest of Truth*, 114.

⁶⁸ Richard Feynman, *The Feynman Lectures on Physics*, Vol. 3 (Addison-Wesley, 1965), 7, as cited in Polkinghorne, *Quantum Physics and Theology: An Unexpected Kinship*, 18-19.

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providence is exercised solely through processes either at the quantum level or at the chaotic level” of physics.⁶⁹ Yet, he does see reality as more tightly unified than Jaeger. For example, concerning human freedom, Polkinghorne recognizes that however mysterious it may be, it ultimately must involve our brains, which are quite physical by the standards of ordinary science.⁷⁰ Therefore, although it may always elude a perfect description such as we may wish, perhaps even necessarily, progress should be possible at least to a theoretical degree, insofar as any theory of causation and agency are advanced.⁷¹ Polkinghorne does not want to throw the baby out with the bathwater, so to speak. Just dismissing the problem of human freedom to some other law-sphere outside of physics, chemistry, or biology is inadequate and unsatisfying.

For his part, Plantinga, concurs with a perspective that is partly compatible to Jaeger’s suggestion that there is no reason to believe that the classically understood natural world is in fact a closed causal continuum.⁷² He even goes so far as to assert “that classical science doesn’t entail either determinism or that the universe is in fact causally closed,” making it “entirely consistent with special divine action in the world, including miracles.”⁷³ It is, rather, only a commitment to the Laplacian picture of a closed deterministic causal continuum of nature that can be described mathematically that prevents divine action.⁷⁴ This is the key issue for Plantinga: it is a metaphysical commitment that prevents us from allowing

⁶⁹ Polkinghorne, *Science and Religion in Quest of Truth*, 89.

⁷⁰ *Ibid.*, 88.

⁷¹ *Ibid.*, 89-90. Polkinghorne acknowledges openly that “a full understanding of the exercise of any form of agency is a task beyond our contemporary capacity to attain,” 89. Nevertheless, “we should continue to struggle with it, even if the timescale for progress is likely to be long,” 90.

⁷² Plantinga, 79. “It is no part of Newtonian mechanics or classical science generally to declare that the material universe *is* a closed system. You won’t find that claim in physics textbooks—naturally enough, because that claim isn’t physics, but a theological or metaphysical add-on. . . . Classical science, therefore, doesn’t assert or include causal closure. The laws, furthermore, describe how things go when the universe is causally closed, subject to no outside causal influence. They don’t purport to tell us how things *always* go; they tell us, instead, how things go when no agency outside the universe acts in it. They tell us how things go when the universe (apart from divine conservation) is causally closed,” *Ibid.*

⁷³ *Ibid.*, 83.

⁷⁴ *Ibid.*, 85.

special divine action (miracles) in the classical world. However, he is aware that there is no reason, scientifically, to doubt the closed system, at least within the perspective of classical science.

Plantinga is convinced that even though classical science in and of itself does not demand a closed causal system following alongside Laplace's ideal, nevertheless, "quantum mechanics offers even less of a problem for divine special action than classical science."⁷⁵ Although differing interpretations exist for exactly how quantum phenomena should be understood, notable for him is that even if the statistical laws that govern the quantum world *were* assumed to be a closed system, "it is far from clear that QM [quantum mechanics] . . . is incompatible with miracles" of the sort that even turn "water into wine."⁷⁶ Plantinga concludes that "given contemporary quantum physics, there isn't any sensible way to say what intervention *is*, let alone find something in science with which it is incompatible."⁷⁷ Perhaps most importantly, though, is Plantinga's claim that if one assumes "the macroscopic physical world supervenes on the microscopic, God could thus control what happens at the macroscopic level by causing the right microscopic collapse-outcomes. In this way God can exercise providential guidance over cosmic history. . . . In this way he might also guide human history. He could do this without in any way 'violating' the created natures of the things he has created."⁷⁸

The above claims are undoubtedly strong ones, but to see them from a widely respected philosopher like Plantinga opens the door for a variety of possibilities in the divine action discussion. Rather than separating the quantum world from the macro-world, they should be understood to be in a close, intertwined and inextricable relationship. Therefore, by God affecting the quantum level in a special way, the macro level is simultaneously affected yet without even altering the normal macro laws. The *relationship* between the two, however, remains for the time being a complete mystery. In this sense, it can't really be said that Plantinga is sidestepping Jaeger's desire that we not look for divine action exclusively at the quantum level. Plantinga has God acting through the quantum level,

⁷⁵ Ibid., 91.

⁷⁶ Ibid., 96, 95.

⁷⁷ Ibid., 97.

⁷⁸ Ibid., 116.

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yes, but only to not violate the macro-world's laws, which God is simultaneously upholding. This innovative way of looking at the situation maintains God's law-abiding standards even through his intervention, which in many ways is both scientifically discernible and indiscernible. It also allows us greater capability in advocating the coexistence of freedom and determinism.

For example, that human freedom is only explainable in terms of "other worldly" laws that are utterly incomprehensible to anything called science, like Jaeger believes, is too far fetched for many to accept. Although there are reasons to shy away from "randomness" as the underlying principle in a God-governed universe, the real lesson of the apparent quantum randomness is more accurately ascribed, even *were* it random, to its *coexistence* with natural laws and seemingly deterministic behavior. This point is often neglected by many classical theists when they reject it as an un-godlike way to let reality be constructed. However, as noted, even Jaeger herself notes that it does obey laws of its own, in a manner. In an interesting comment along these lines as applied to human behavior at large, Raoul Nakhmanson comments that:

QM is 'microsociology.' Like its humane sister, it makes only probabilistic forecasts. The transition to classical physics is the transition from sociology of persons to sociology of crowds: the level of freedom decreases and behavior becomes deterministic. Feynman's statement [the] 'quantum world is not like anything that we know' is right only if we do not take into account living beings. If a baby, having more experience with his parents than with 'inanimate' matter, could make experiments, the behavior of microparticles would appear to it to be very natural.⁷⁹

In this light, it is all the more fascinating what analogies one can draw concerning human behavior, which is indeed often psychologically and biophysically predictable to a probabilistic degree, and quantum phenomena. For example, one could even suggest that in the Great

⁷⁹ Raoul Nakhmanson, "The Ghostly Solution of the Quantum Paradoxes and Its Experimental Verification," in *Frontiers of Fundamental Physics*, ed. M Barone and F. Selleri, (New York, NY: Plenum Press, 1994), 596.

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Controversy context described by Ellen White,⁸⁰ sinful human actions appear free, but God is slowly demonstrating the deterministic pattern of where a sinful freedom that is outside the influence of God will lead humanity, were one inclined to view QM negatively. Of course this is admittedly a very speculative notion. Other possibilities surely exist as well that are more morally neutral. As has been noted, the real mystery of human freedom in any account is that it is partly free and partly deterministic, governed by various biophysical and psychological patterns and limitations. In the least, quantum physics teases us with the insistence that at some level both a fairly strict determinism and some form of indeterminism do coexist; necessity and contingency coexist. That itself is the mystery.⁸¹

To summarize the presentation of his views thus far, however, Plantinga asserts that “what we should think of special divine action . . . doesn’t depend on QM or versions thereof, or on current science more generally. Indeed, what we should think of current science can quite properly depend, in part, on theology.”⁸² I concur, and would add that different versions of theology, for example, classic double-predestination Calvinism, would not have required a conceptual difficulty like quantum physics, but more subtle and complex theologies might benefit greatly from the analogies that a quantum-inspired world might give us. As wonderfully comprehensible and pragmatically useful as the basic Newtonian inspired mathematical-laws are and the testimony they give of their Creator, how much more so can we think of a God who’s creation coexists with many mysteries that even the greatest minds cannot uncover? It is to this issue that I will turn in this last portion of the study in the writings of Ellen White.

⁸⁰ Ellen White, *The Great Controversy* (1911), 281. All Ellen White quotations are extracted from *The Published Ellen G. White Writings CD-ROM*, 2008 edition.

⁸¹ The philosopher of science, Evan Thompson, shares in the context of animate life, which is the heart of the matter, “as an empirical issue, the interplay between contingency and necessity in the history of life will remain unsettled for some time. What can be said, however, is that it is conceptually unhelpful to oppose the two,” Evan Thompson, *Mind in Life: Biology, Phenomenology, and the Sciences of the Mind* (Cambridge, MA: Belknap Press of Harvard University Press, 2007), 217.

⁸² Plantinga, 121.

4. Ellen White's (1827-1915) Perspective on the Mysteries of Nature

The purpose of this section is not to recount White's entire philosophy of science or nature. The present focus and aim is more narrow. Does White make statements about nature, and reality in general, that would be open to quantum phenomena's conceptual challenges as discussed by our above philosophers, theologians, and scientists, given that her writings predate the discovery of quantum phenomena? In other words, do paradoxes have a place in her thinking, despite observing that she never used the word "paradox," preferring the word "mystery" instead?

First, it must be noted that in many ways White does support Jaeger's comment which I referenced in the introduction on divine interaction being universally manifested and a creation *ex nihilo*,⁸³ and that ultimately, in certain senses, God is incomprehensible⁸⁴ despite nature appearing generally understandable, following the principle of cause and effect with "unerring certainty."⁸⁵ Nevertheless, concerning nature, she also shared:

Many teach that matter possesses vital power,—that certain properties are imparted to matter, and it is then left to act through its own inherent energy; and that the operations of nature are conducted in harmony with fixed laws, with which God himself cannot interfere. This is false science, and is not sustained by the word of God. Nature is the servant of her Creator. God does not annul his laws, or work contrary to them; but he is continually using them as his instruments. Nature testifies of an intelligence, a presence, an active energy, that works in and through her laws. There is in nature the continual working of the Father and the Son. Christ says, 'My Father worketh hitherto, and I work.' [John 5:17.]⁸⁶

⁸³ "In the formation of our world, God was not beholden to preexistent substance or matter. For the things which are seen were not made of things which do appear. On the contrary, all things, material or spiritual, stood up before the Lord Jehovah at His voice," Ellen White, *Selected Messages Book 3*, 312.

⁸⁴ Ellen White, *Christian Education*, 192. "Just how God accomplished the work of creation, he has never revealed to men; human science cannot search out the secrets of the Most High. His creative power is as incomprehensible as his existence."

⁸⁵ Ellen White, *Christ's Object Lessons*, 84. "In the laws of God in nature, effect follows cause with unerring certainty," *Ibid*.

⁸⁶ White, *Christian Education*, 194-195.

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Interestingly, not only does White support divine interaction in the upholding of nature, but she also clearly wrote that God does not annul his laws, or work contrary to them, despite the fact that he possesses divine freedom.⁸⁷ This implies a far more complex picture of laws than simply a closed or completely open natural world. Continuing this theme, she also asserted that:

As regards this world, God's work of creation is completed. For 'the works were finished from the foundation of the world.' [Hebrews 4:3.] But his energy is still exerted in upholding the objects of his creation. It is not because the mechanism that has once been set in motion continues to act by its own inherent energy, that the pulse beats, and breath follows breath; but every breath, every pulsation of the heart is an evidence of the all-pervading care of Him in whom 'we live, and move, and have our being.' [Acts 17:28.] It is not because of inherent power that year by year the earth produces her bounties, and continues her motion around the sun. The hand of God guides the planets, and keeps them in position in their orderly march through the heavens. He 'bringeth out their host by number; he calleth them all by names by the greatness of his might, for that he is strong in power; not one faileth.' [Isaiah 40:26.] It is through his power that vegetation flourishes, that the leaves appear, and the flowers bloom. He 'maketh grass to grow upon the mountains,' and by him the valleys are made fruitful. All the beasts of the field seek their meat from God, [Psalm 147:8; 104:20, 21.] and every living creature, from the smallest insect up to man, is daily dependent upon his providential care. In the beautiful words of the psalmist, 'These wait all upon thee.'⁸⁸

The above passages make clear that God's care is present throughout all of creation continuously, thus Jaeger's comments on a universal divine action rather than looking for a "god of the gaps" type of interference located solely in the quantum world are warranted.

⁸⁷ White, *The Great Controversy* (1911), 525. "Men of science claim that there can be no real answer to prayer; that this would be a violation of law, a miracle, and that miracles have no existence. The universe, say they, is governed by fixed laws, and God Himself does nothing contrary to these laws. Thus they represent God as bound by His own laws—as if the operation of divine laws could exclude divine freedom. . . . The natural cooperates with the supernatural," *Ibid.*

⁸⁸ *Ibid.*, 195.

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However, the above insight does not mean that all of nature, or what we can perceive through nature, is simply mathematical/deterministic or rationally comprehensible! We may need to expand our notion of science. Thus White remarked:

Men of science think that they can comprehend the wisdom of God, that which he has done or can do. The idea largely prevails that he is restricted by his own laws. Men either deny or ignore his existence, or think to explain everything, even the operation of his Spirit upon the human heart; and they no longer reverence his name, or fear his power. They do not believe in the supernatural, not understanding God's laws, or his infinite power to work his will through them. As commonly used, the term 'laws of nature' comprises what men have been able to discover with regard to the laws that govern the physical world; but how limited is their knowledge, and how vast the field in which the Creator can work in harmony with his own laws, and yet wholly beyond the comprehension of finite beings!⁸⁹

In this passage, it does appear that God's laws are more complicated than finite man can comprehend. Whether and in what way this takes place at the mathematical realm is uncertain.⁹⁰ At this point, however, it is necessary to note the frequency and context of mysteries that mankind cannot understand, and their conceptual realities.

White maintained that several things present mysteries that humans cannot understand, yet are nevertheless subject to "divine science." For example, "human science is too limited to comprehend the atonement. The plan of redemption is so far-reaching that philosophy cannot explain it. It will ever remain a mystery that the most profound reasoning cannot fathom. The science of salvation cannot be explained; but it can be known by experience."⁹¹ Although by no means do I wish to say that the atonement is merely a physical set of occurrences, yet nevertheless, I wonder, will not nature itself reveal mysteries that cannot be explained, but experienced?

⁸⁹ Ibid., 194.

⁹⁰ She noted, interestingly, that "the gospel does not address the understanding alone. If it did, we might approach it as we approach the study of a book dealing with mathematical formulas, which relate to the intellect alone. . . . Its aim is the heart. It addresses our moral nature, and takes possession of the will," Ellen White, *Our High Calling*, 105.

⁹¹ Ellen White, *The Desire of Ages* (1898), 494-495.

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Such is precisely the case with quantum phenomena, at least as currently understood. Perhaps there is an analogy possible that we can draw. For, as White observed, “so wide was Christ’s view of truth, so extended His teaching, that every phase of nature was employed in illustrating truth.”⁹² Is not the implication here that there are spiritual truths illustrated by nature? How would that be possible were nature merely mathematical knowledge in physical form? For example, White also shared:

The Author of this spiritual life is unseen, and the exact method by which that life is imparted and sustained, it is beyond the power of human philosophy to explain. Yet the operations of the Spirit are always in harmony with the written word. As in the natural, so in the spiritual world. The natural life is preserved moment by moment by divine power; yet it is not sustained by a direct miracle, but through the use of blessings placed within our reach. So the spiritual life is sustained by the use of those means that Providence has supplied.⁹³

White elsewhere compares this spiritual life to nature, claiming that “as the children study the great lessonbook of nature, God will impress their minds. As they are told of the work that He does for the seed, they learn the secret of growth in grace.”⁹⁴ If the seed’s growth illustrates a power working within it that mirrors a spiritual reality, then is this knowledge merely mathematical science at work? If God is incomprehensible yet also revealed, then nature must also, as God, be both incomprehensible and understandable at the same time. For, as White shares, “rightly interpreted, nature is the mirror of divinity.”⁹⁵ If divinity is incomprehensible, then how

⁹² Ellen White, *Christ’s Object Lessons*, 20.

⁹³ Ellen White, *Acts of the Apostles*, 285.

⁹⁴ Ellen White, *Testimonies for the Church Volume Eight*, 326-327. Elsewhere she adds, “Nature is full of lessons of the love of God. Rightly understood, these lessons lead to the Creator. They point from nature to nature’s God, teaching these simple, holy truths which cleanse the mind, bringing it into close touch with God. These lessons emphasize the truth that science and religion can not be divorced,” White, *Spalding and Magan Collection* (1985), 186.

⁹⁵ Ellen White, *The Upward Look*, 182. She adds that “the branches are not tied to the vine by any mechanical process or artificial fastening. They are united to the vine and have become part of it. They are nourished by the roots of the vine. So those who receive Christ by faith become one with Him in principle and action. They are united to Him, and the life they live is the life of the Son of God. They derive their life from Him who is life,” 182.

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is nature, which gives only mathematical cause and effect knowledge, able to reflect spiritual truths? It would seem to be a law-sphere violation, unless nature revealed non-mathematical truths as well.

Polkinghorne's example of the dual human-divine nature of Christ as a quantum mystery, clearly self-evident, but impossible to explain, is also echoed with White's description of Christ. She shares, "The incarnation of Christ has ever been, and will ever remain a mystery."⁹⁶ Similarly, "The limited capacity of man cannot define this wonderful mystery—the blending of the two natures, the divine and the human. It can never be explained. Man must wonder and be silent. And yet man is privileged to be a partaker of the divine nature, and in this way he can to some degree *enter into the mystery*."⁹⁷ This situation sounds very much like an analogy to the quantum phenomena, as we currently understand it. We can, propositionally, know it to be true, namely, their co-existence, but we cannot explain it. We can enter the mystery, but not fully understand it. Some may object to calling this a paradox; I see that as a failure to acknowledge something as true but necessarily mysterious: That is the proper definition of paradox. Thus, if the above example were accurate, we can through *natural science* uncover a phenomena, the mysterious wave/particle duality of quantum physics, that is necessarily mysterious. They clearly both exist, *propositionally*, but we can't explain why. It is a paradox, in the proper, humble, sense of the word.

Interestingly, not only does White make the above statement concerning Christ, the living Word of God, but she wrote the *same thing* of the written Word. "The Bible, with its God-given truths expressed in the language of men, presents a union of the divine and the human. Such a union existed in the nature of Christ, who was the Son of God and the Son of man."⁹⁸ This is no insignificant comparison, as it indicates an ultimately quantum-like principle as the hermeneutical foundation of the Word. Interestingly, this is precisely what protects it from one-sided "spiritual only" interpretations and historical-critical interpretations. The science behind inspiration is a quantum-like phenomena, requiring one to recognize

⁹⁶ Ellen White, *13MR* (The Baker Letter), 19.

⁹⁷ Ellen White, *1888 Materials* (1987), 332 (emphasis mine). C.f. "This union of divinity and humanity, which was possible with Christ, is incomprehensible to human minds," *Ibid*.

⁹⁸ Ellen White, *Lift Him Up*, 117.

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both elements, the human and divine, simultaneously, to correctly interpret it. As noted, however, it is also precisely such a quantum-like hermeneutical approach that protects the *propositional* aspect of Scripture, yet without sliding into a complete or strict verbal inspiration, as some do. We *can* know the meaning of Scripture, accurately and clearly, concerning the great truths, while acknowledging that God has nevertheless intentionally given the written Word such that “The Word of God, like the character of its divine Author, presents mysteries that can never be fully comprehended by finite beings,”⁹⁹ and also remains given in the often imprecise language of men. As White also stated it more fully, in what I will term the negative sense:

Men of the greatest intellect cannot understand the mysteries of Jehovah as revealed in nature. Divine inspiration asks many questions which the most profound scholar cannot answer. *These questions were not asked that we might answer them, but to call our attention to the deep mysteries of God and to teach us that our wisdom is limited; that in the surroundings of our daily life there are many things beyond the comprehension of finite beings. Skeptics refuse to believe in God because they cannot comprehend the infinite power by which He reveals Himself. But God is to be acknowledged as much from what He does not reveal of Himself, as from that which is open to our limited comprehension. Both in divine revelation and in nature, God has given mysteries to command our faith. This must be so. We may be ever searching, ever inquiring, ever learning, and yet there is an infinity beyond.*¹⁰⁰

Put positively, however, White shared that “He who studies most deeply into the mysteries of nature will realize most fully his own ignorance and weakness. He will realize that there are depths and heights which he cannot reach, secrets which he cannot penetrate, vast fields of truth lying before him unentered.”¹⁰¹ Could the quantum world be part of these impenetrable depths? Similarly, from a positive perspective, “In the natural world God has placed in the hands of the children of men the key to unlock the treasure house of His Word. The unseen is illustrated by the seen;

⁹⁹ Ellen White, *A Call to Stand Apart*, 46.

¹⁰⁰ Ellen White, *The Ministry of Healing*, 431 (emphasis mine).

¹⁰¹ Ellen White, *Education*, 133.

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divine wisdom, eternal truth, infinite grace, are understood by the things that God has made.”¹⁰² This seems to indicate that the natural world’s meaning is designed to point to *spiritual* truths. But how could this be, were it merely an expression of a Master mathematician’s, i.e., intuitively comprehensible, work? Is not the knowledge we are to derive from nature supposed to also include helpful hints for appreciating spiritual knowledge, and not merely mathematical-physical comprehensible knowledge? In this case, as noted, I would suggest that both classical (mathematical) ways of thinking, in combination with paradoxical (mysterious) concepts, are combined in both the natural world and Scripture. Scripture then can reveal both mysterious things related to faith only, but also plain, propositional truth that is in harmony with the mysterious truths, even if that relationship is paradoxical. As such, nature does not trump Scripture and special revelation with differing or superior *content* at all, it merely serves to illuminate and illustrate Scripture with *concepts* that we might not otherwise see in Scripture itself, and which our Greek inheritance of the primacy of mathematical rationality might inhibit us from accepting.

I ask again, how would the above be possible were the sphere sovereignty of Dooyeweerdians, Jaeger among them, held too tightly? It is not that there aren’t different aspects to reality, but I believe they are more tightly interwoven than some Dooyeweerdians seem to think. The “mathematical natural world” of Jaeger seems, to White, perfectly capable, and even *designed*, to intentionally intimate *divine* realities which are not simply mathematical (as wonderful as mathematics in itself may be, as another dimension of God’s aesthetic imagination¹⁰³). Nature is not merely the mathematical-scientifically understandable; nor is science as such simply mathematics. Were the current quantum paradoxes resolved through later, more advanced mathematics or empirical research, as Jaeger postulates is possible, then nature would only reveal a yet deeper conceptual paradox or mystery, if White’s comments on the centrality of

¹⁰² Ellen White, *Special Testimonies On Education*, 61.

¹⁰³ I intend no criticism *per se* of the symmetrical beauty of mathematics and its many functional purposes. Nevertheless, as noted above, “the gospel does not address the understanding alone. If it did, we might approach it as we approach the study of a book dealing with mathematical formulas, which relate to the intellect alone,” Ellen White, *Our High Calling*, 104.

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mysteries held true,¹⁰⁴ and if we were to have any hope of entertaining evidence for human freedom from the natural world. In other words, White's notion of mystery includes more than simply a higher π number, or other conceptually classical "objects" of knowledge that are currently unknown or a "mystery" to us. The infinite mysteries that God does plan to unravel to us throughout eternity are not merely akin to higher numbers and patterns; they represent new conceptual paradigms. And it seems that some conceptual paradigms or frameworks He reserves for Himself and not creatures, but that this possibility exists He reveals throughout nature itself. As such, I would rather move away from a definition of natural science that limits itself to mathematical knowledge as it is typically conceived. Inevitably, such a careful exclusionary preservation of classical natural scientific knowledge within our own scientific frameworks and paradigms

¹⁰⁴ White's most poignant warning on those who resist mysteries is as follows: "To many, scientific research has become a curse. God has permitted a flood of light to be poured upon the world in discoveries in science and art; but even the greatest minds, if not guided by the word of God in their research, become bewildered in their attempts to investigate the relations of science and revelation.

"Human knowledge of both material and spiritual things is partial and imperfect; therefore many are unable to harmonize their views of science with Scripture statements. Many accept mere theories and speculations as scientific facts, and they think that God's word is to be tested by the teachings of 'science falsely so called.' 1 Timothy 6:20. The Creator and His works are beyond their comprehension; and because they cannot explain these by natural laws, Bible history is regarded as unreliable. Those who doubt the reliability of the records of the Old and New Testaments too often go a step further and doubt the existence of God and attribute infinite power to nature. Having let go their anchor, they are left to beat about upon the rocks of infidelity.

"Thus many err from the faith and are seduced by the devil. Men have endeavored to be wiser than their Creator; human philosophy has attempted to search out and explain mysteries which will never be revealed through the eternal ages," White, *Great Controversy* (1911), 522. She adds, "It is a masterpiece of Satan's deceptions to keep the minds of men searching and conjecturing in regard to that which God has not made known and which He does not intend that we shall understand. It was thus that Lucifer lost his place in heaven," *Ibid.*, 523. C.f., "Christ withheld no truths essential to our salvation. Those things that are revealed are for us and our children, but we are not to allow our imagination to frame doctrines concerning things not revealed. Again and again these non-essential subjects have been agitated, but their discussion has never done a particle of good. We are not to allow our attention to be diverted from the proclamation of the message given us. For years I have been instructed that we are not to give our attention to non-essential questions. We are not bidden to enter into discussion regarding unimportant subjects. Our work is to lead minds to the great principles of the law of God," Ellen White, "West Indian Messenger," July 1, 1912.

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will dissuade one from properly integrating the divine lessons into our science that nature was designed to reveal to us. Such efforts will also break down the harsh “irrational” boundary that prevents propositional truth from entering into Scripture, as Scripture presents a quantum-like hermeneutical key to its self-interpretation.

5. Conclusion

Lydia Jaeger’s question concerning divine action having a privileged place in the quantum world opens up a key issue in the current debates about God and the natural world. I believe her initial conclusion, on its own, stands its ground firmly. We must indeed reject the notion that God only acts, in a pantheistic or panentheistic way, in part of his creation, for example at the quantum level. His providential care works through all the natural laws he has made with what can only be described as divine wisdom and power.

On the other hand, as Jaeger expands her views to pragmatically limit natural science to the mathematical, which follows alongside a long established and highly respected history, I offer a cautionary note. I do believe in different aspects of reality, and correspondingly differing laws (e.g., moral and natural, the latter of which has multiple levels, like physics and biology, which can all basically be modeled mathematically). However, I do not think that the sphere sovereignty is as tight as Jaeger suggests it is. Although she certainly would assert that they coexist alongside each other, I would rather suggest that, following Ellen White’s insights, they coexist *within* each other, illuminating each other in a more unified manner.

In explanation of the above, the paradoxes occur not when law-spheres are violated, but rather serve to originate the spheres themselves. They emerge from within the spheres. Quantum physics illustrates this by revealing a paradox at the heart of what was considered a single sphere, namely, physics. The most significant result of this way of viewing nature is that nature will reveal some of the conceptual issues that are found in the “other” spiritual spheres of faith, for example as just noted, specific kinds of mysteries, like faith and works resembling those at the quantum level. I would rather define natural science and the objects of rationality to be more than merely mathematical. And I would rather not so hastily dismiss issues like human freedom and God’s rationality to be “incomprehensible”

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merely because they belong to other metaphysical spheres or dimensions, while acknowledging that they obviously exist within nature (e.g., our biological brains). I believe that nature itself reveals hints toward the nature of these mysteries, and that God has so mingled together the concepts at work in both the natural and divine realities that we can “enter” into the mystery. This means “mathematical natural science” cannot just be left alone to do its thing atheistically, but is subject to the other spheres’ insights, including in particular, the Word of God.

That nature speaks analogically of divine realities is recognized by individuals like John Polkinghorne and Alvin Plantinga. They each see ways in which quantum phenomena are helpful to theologians to conceptually grapple with age-old theological problems like the dual human/divine nature of Christ and the possibility of miracles in a formerly seemingly closed causal natural order. Where they fall short, however, is in applying this to hermeneutics itself, in particular the Word of God, and the possibility of propositional truth emerging from the text of Scripture, despite whatever apparent scientific, historical, linguistic, and cultural barriers may exist in our efforts to grasp the original meaning. Ellen White makes some advances in this regard, though, being unaware of the phenomenal nature of quantum physics, she has no specific analogies in this area, except to assert that nature will, if studied deeply, point toward divine realities that are incomprehensible, which was already in many ways very much the case in her time, but is especially so in light of quantum phenomena. This is not because there is a “sphere sovereignty” violation, but rather because it is intrinsic to the system itself, and is meant to be understood as such. How precisely we communicate these truths is a matter for further thought and careful articulation.

Michael F. Younker has an M.A. in Religion from Andrews University where he is currently a Ph.D. student studying philosophical theology. His academic interests revolve around the many issues facing the relationship between science and religion. He enjoys a wide variety of outdoor activities and has traveled extensively, especially in the Middle East. He is currently the Managing Editor of *JATS*.
myounker@andrews.edu