

SCIENCE, RELIGION, AND INCOMPATABILITY:

CAN PHILOSOPHY OF SCIENCE HELP?

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Abstract

Attempts by some scientists and philosophers of science to discredit religion – and by extension, religious studies – seem to assume the rationale of two major, heavily-critiqued philosophies of science: logical positivism and critical rationalism. Though these philosophies may not be explicitly invoked in arguments against the compatibility of science and religion, their internal logic seems to be at work in these arguments. As a case study, this essay will attempt to show the correlation between these two philosophies and the writing of philosopher of science Alex Rosenberg. However, rather than critiquing Rosenberg via critiques of these philosophies, this essay will attempt to show the compatibility of science and religion *when these philosophies are assumed*. In other words, it will attempt to beat Rosenberg at his own game. The essay will proceed by first explicating logical positivism in the thought of Moritz Schlick and the young Ludwig Wittgenstein. In the second section, the essay will explore the critical rationalism of Karl Popper. At the end of each section, it will be argued that if something like the logic of these two respective schools is being employed by critics like Rosenberg, religious claims can still function compatibly with science. In the case of logical positivism, the argument will rely upon the thought of William James, and also Karl Barth, as understood by J. Wentzel Van Huyssteen. For critical rationalism, the argument for compatibility will be found in the thought of Karl Popper himself. The goal of the argument is to defend religious studies as a valid discipline in the face of its detractors.

Introduction

Many religious practitioners have experienced the jeers of those who would attempt to dismiss all religion, purportedly in the name of ‘science,’¹ as mere fancy for the weak-minded.

However, as is evident from the vast amount of literature in the philosophy of science over the past one hundred years, such dismissals usually rely on views of ‘science’ that have long been abandoned. Yet, even if recent philosophy of science is less sure about the supposedly weak epistemic status of the claims made about the world by various religions, the popular sentiment seems to remain: ‘science’ and religion are at odds with one another. Indeed, even philosopher of science Alex Rosenberg, chair of the philosophy department at Duke University, has gone so

¹ Because part of the point of this essay is that ‘science’ is a contested term, it will usually appear in scare quotes, except when its definition is being assumed within a particular philosophical model.

far as to claim that religion and empirical inquiry are incompatible with one another.² Though many philosophers are not as confident as Rosenberg, the oft-cited 1998 survey by Larson and Witham of “greater” scientists in the National Academy of Sciences seems to support the notion that religion and ‘science’ are strange bedfellows: only 7 percent claimed a personal belief in a personal God, whereas 72.2 percent claimed personal disbelief.³ For just one example of how ‘science’ is often used to discount religion, recent cognitive neuroscience has been used to call into question the religious idea of an immaterial soul.⁴ Conversely, one might think of the ways in which fundamentalist interpretations of Genesis 1-3, such as those presented the past few years by Ken Ham, have been used to attempt to discredit mainstream ‘science.’

Before beginning, it should be acknowledged that the philosophy of science is not a monolithic discipline, but is more accurately described as philosophies of science. However, the same is obviously true of religion. Indeed, one may already be wondering what ‘science’ and ‘religion’ mean, which points toward what philosopher Karl Popper called the “demarcation problem.”⁵ Briefly put, philosophers have been struggling for over a century with how to differentiate ‘scientific’ knowledge from other types of knowledge. Yet, it is precisely this problem which is so important for thinking about the in/compatibility of ‘science’ and ‘religion.’ Thus, rather than prescribing a definition for these areas in the beginning, we shall mainly be

² Alex Rosenberg, *The Atheist's Guide to Reality: Enjoying Life Without Illusions* (W. W. Norton & Company: W. W. Norton & Company, 2012), xi.

³ Edward J. Larson and Larry Witham, "Leading Scientists Still Reject God," *Nature* 394, no. 6691 (Jul 23, 1998), 313.

⁴ The philosopher and theologian Nancey Murphy engages this topic from a theological point of view in “Science and Society,” in *Witness: Systematic Theology, Volume 3*, James Wm. McClendon (Nashville, TN: Abingdon Press, 2000), 126-129. However, she does so with the aim of showing that science helps to inform theology, i.e. science and theology are not incompatible. The remainder of this essay will be devoted to exploring the feasibility of such a perspective.

⁵ Popper uses this phrase in several places, for instance, see “Science: Conjectures and Refutations” in *Philosophy of Science: Contemporary Readings*, eds. Yuri Balashov and Alex Rosenberg (New York: Routledge, 2002), 300.

concerned with describing what ‘religion’ might look like given a certain demarcation of ‘science,’ and whether or not the two are consequently compatible.

Further, rather than exploring all extant philosophies of science, the scope of this paper will be limited to interactions with two major schools in the philosophy of science: logical positivism as represented by Moritz Schlick, and Karl Popper’s critical rationalism. Though these two philosophies have been significantly challenged and reworked by philosophers over the past 50 years, my experience has been that these two philosophies are alive and well at the popular level and are frequently used in attempts to discredit religion. Consequently, although one could argue that a majority of recent philosophies of science are in some way amenable to religion (thus making this paper irrelevant), this essay is intended for religious practitioners who would attempt to answer charges like Rosenberg’s. In each section, the thesis will be that, though religious study may not be considered a ‘science’ within a particular model, it is never incompatible with the ‘science’ defined by that model. In other words, given these major philosophies of science, religion, broadly defined, maintains some degree of compatibility with that which is called ‘science.’

Logical Positivism

Every study of the history of the philosophy of science must take into account what has come to be known as *logical positivism*, a philosophical system that most agree originated with thinkers in Vienna between 1922 and 1938. A group of men known as the ‘Vienna Circle’ began meeting around this time to discuss issues in science and philosophy. This group consisted of prominent philosophers, such as Rudolf Carnap, Otto Neurath, Herbert Feigl, and Moritz Schlick;

mathematicians, such as Kurt Gödel and Hans Hanh; and physicist Philipp Frank.⁶ These thinkers, who lived in the tumultuous period between two world wars, sought to find an epistemological foundation on which to ground science.

Heavily influenced in those years by the early philosophy of Ludwig Wittgenstein,⁷ the logical positivists sought to distinguish the knowledge that comes through empirical inquiry, i.e. science, from other types of knowledge. In his *Tractatus Logico-Philosophicus*, Wittgenstein was concerned to show that problems in philosophy are due to a lack of clarity in language. He summarizes his thesis thus: “What can be said at all can be said clearly; and whereof one cannot speak thereof one must be silent.”⁸ Though Wittgenstein – who some argue was attempting to make room for the mystical⁹ – was not comfortable with the ways in which his arguments were taken up by the logical positivists,¹⁰ his early philosophy provided the logical positivists with a way to reduce the complexity of language and experience to propositional truths. In their quest to ground their science in unquestionable, objective truth, the logical positivists turned to empiricism, or the epistemological approach that looked to sensory experience as its source of knowledge.¹¹ Using experience as their basis for all forms of knowledge, the positivists could then use logical reasoning to reduce, clarify, and build a body of cognitive-propositional scientific knowledge. It is here that the early work of Wittgenstein becomes so important: if, as Wittgenstein argues, propositions are logical pictures of facts, or states of affairs, which are

⁶ Yuri Balashov and Alex Rosenberg, eds., *Philosophy of Science: Contemporary Readings* (New York: Routledge, 2002), 8.

⁷ Wentzel van Huyssteen, *Theology and the Justification of Faith: Constructing Theories in Systematic Theology* (Grand Rapids, Mich.: Wm. B. Eerdmans Publishing Co., 1989), 4.

⁸ Ludwig Wittgenstein, “Tractatus Logico-Philosophicus,” in *International Library of Psychology, Philosophy, and Scientific Method*, ed. C.K. Ogden. (New York, NY: Harcourt, Brace & Company, Inc., 1922), 27.

⁹ “[W]hat was important in the *Tractatus* was the ‘mysticism’ that it could *not* express. See James W.m McClendon, Jr, *Witness*, vol. 3 of *Systematic Theology* (Nashville: Abingdon Press, 2000), 244.

¹⁰ In fact, as is well attested in the literature, the later Wittgenstein, especially in his *Philosophical Investigations*, would refute many of his own conclusions in the *Tractatus Logico-Philosophicus*.

¹¹ Van Huyssteen, *Theology and Justification of Faith*, 4.

based on experience of the world,¹² then for the logical positivists, the goal of science must be to describe the world as clearly and concisely as possible, i.e. to get experience right. *Everything else must be passed over in silence.*

This connection to Wittgenstein is made explicit in several places. For instance, in his lecture, “The Future of Philosophy,” Moritz Schlick claims his own view of ‘philosophy’ and ‘science’ is expressed most clearly by Wittgenstein. In this lecture, Schlick attempts to show that ‘philosophy’ is misguided as a “science dealing with the most general truths”.¹³ Rather, there can be no truth apart from observable phenomena in the world. Instead, Schlick proposes that ‘philosophy’ is better understood as the “pursuit of meaning,” whereas ‘science’ is the “pursuit of truth.”¹⁴ Implicit in this distinction is the “verification theory of meaning” so often identified with the logical positivists: in order to be considered knowledge, the meaning of a proposition must be verified by the ‘facts’ of experience, i.e. there must be a positive example (hence ‘positivism’) of a proposition in the world of facts.¹⁵ In making this distinction, Schlick employs a Wittgensteinian scheme, quoting Wittgenstein directly: “The object of philosophy is the logical clarification of thoughts. Philosophy is not a theory but an activity. The result of philosophy is not a number of ‘philosophical propositions,’ but to make propositions clear.”¹⁶ In other words, philosophy’s task becomes subordinate to that of science – its aim is to clarify, through logic, the raw content provided by the empirical sciences (hence ‘logical’ positivism). By implication, then, philosophical problems arise due to mistakes or misunderstandings in

¹² Wittgenstein, *Tractatus*.

¹³ Moritz Schlick, “The Future of Philosophy,” in *Philosophy of Science: Contemporary Readings*, eds. Yuri Balashov and Alex Rosenberg (New York: Routledge, 2002), 13.

¹⁴ *Ibid.*, 15.

¹⁵ Elsewhere, Schlick himself defines this theory: “The act of verification in which the path to the solution finally ends is always of the same sort: it is the occurrence of a definite fact that is confirmed by observation, by means of immediate experience.” Moritz Schlick, “The Turning Point in Philosophy,” trans. David Rynin, in A.J. Ayer, *Logical Positivism* (New York, NY: The Free Press, 1959), 56.

¹⁶ Schlick, “Future,” 20.

language; or, they arise because the methods of science are unable to be applied because of technical shortcomings.¹⁷ Thus, the answer to philosophical problems is simply the refinement of language through analytical methods, or through the synthesis of more ‘facts’ through the sciences.

It is here that the analytic/synthetic distinction first introduced by Immanuel Kant in a rather different context comes into play. It is obvious by now that logical positivism recognizes synthetic statements that can be positively shown in the world of ‘facts.’ However, it also recognizes so-called ‘analytic’ statements that are non-empirical in nature. The truth of analytic statements, rather than being dependent on the world of immediate sense-experience, can be tested by the meaning of the terms within the statements themselves. In other words, analytic statements are matters of definition. For example, the statement: “All bachelors are unmarried men” can be analyzed simply by understanding the meaning of the individual terms, such as “bachelors” and “unmarried men.” This statement is true if the terms agree, apart from any empirical verification. Analytical statements are often found in the formal sciences of logic and mathematics.

Now that this brief account of logical positivism according to Schlick has been given, our task is to explore what this view of science means for religion. Logical positivism is the more problematic of the two philosophies that will be explored because it essentially expands ‘science’ to include all propositional statements with a truth value. Meaningful statements become the task of philosophy, and are dependent on the clarity of the terms comprising a proposition. The truth value of these statements, if synthetic in nature, must be verified by facts immediately available to the senses, or what Schlick calls “immediate experience.”¹⁸ Moreover, Schlick

¹⁷ Ibid., 19.

¹⁸ Schlick, *Turning Point*, 56.

reduces 'science' even further than some of his fellow logical positivists: science becomes not only the pursuit of true propositions about experience; it becomes simply the "pursuit of truth."

Philosophy, through analytic reasoning, seeks to give meaning to this truth

On this view, it would seem that, *prima facie*, science and religion are indeed incompatible. Indeed, not only religion, but a number of other disciplines might seem incompatible with 'science' insofar as they make claims to truth; for the only truthful statements which remain are those which can be verified in sense experience ('scientific' statements) or which are analytic in nature ('philosophical' statements). Studies in literature, the arts, music, and a myriad of other topics, though they certainly may be interesting, have no truth-value apart from analytic philosophy because they cannot be verified through experience, except insofar as they affect the emotions of the practitioner. Similarly, on this scheme, religious language is valid only in its "emotive" dimension, or the way it expresses the attitudes and sentiments of the speaker.¹⁹ Such religious statements as "God exists" are ultimately meaningless, or as far as science can tell, untruthful, because the term "God" cannot be verified in sense experience, nor is it clear what this term means analytically. In summary, then, the implication of logical positivism is that only those fields which are in some way 'scientific' can purport to say anything true about the world.

Thus, it would appear that it is this conception of 'science' and meaning that is at play when Rosenberg declares that 'science' and 'religion' are incompatible. Indeed, Rosenberg seems to be employing a positivistic rationality, though he does not acknowledge this explicitly,²⁰ when claiming that theological beliefs in God are as meaningless as belief in Santa

¹⁹ James Wm. McClendon, Jr., and James M. Smith, *Convictions: Defusing Religious Relativism*, rev. ed. (Valley Forge, PA: Trinity Press International, 1994), 21.

²⁰ Instead, Rosenberg claims a philosophy he calls "Scientism," which in my view is simply logical positivism reworked.

Claus.²¹ If true, this might be enough to give most philosophers pause, since logical positivism is arguably one of the most discredited philosophies of science today. However, because arguments against logical positivism fall outside of the scope of this essay, we must still consider whether, *given* logical positivism, science is indeed incompatible with religion.

Despite the arguments above, it is not at all clear that logical positivism and religion are completely incompatible. Granted, certainly some theological claims, such as “before the world was, there was God” would be incompatible (i.e. meaningless and fact-less), but would they all? Taking logical positivism on its own terms, it seems it would still be possible to explore theological claims, or broader supernatural/religious claims, in a scientific, i.e. empirical, way. For instance, psychologist and philosopher William James was a proponent of parapsychology, advocating the study of paranormal activity and helping to found the American Society for Psychical Research.²² In his Gifford lectures, he argues that religious experience (rather than religious institutions) should be scientifically investigated within the field of religion.²³ Though James was not operating within the same philosophical framework as the logical positivists, his arguments seem valid on a positivist scheme. Indeed, within the framework laid out above, religion can become a legitimate science inasmuch as it seeks to verify its claims in experience. On the basis of such claims, the work of theologians and religious philosophers would be, in the words of Wittgenstein, to “clarify, through logic” the claims of religion as an empirical discipline. That is, empirical investigations into religious claims would provide the raw material for analytical deductions within the science of religion. In other words, religion, like science,

²¹ Rosenberg, *Atheists Guide*, 12.

²² Deborah Blum, *Ghost Hunters: William James and the Search for Scientific Proof of Life After Death*, Reprint ed. (New York, NY: Penguin Books, 2007).

²³ He presented his work in this area in his Gifford lectures of 1901-1902, which were edited into a single book. See William James, *The Varieties of Religious Experience: a Study in Human Nature* (Harmondsworth, Middlesex, England.: Penguin Classics, 1982).

would still seek to get experience right; it would also, like philosophy, pursue the meaning of this experience. In this way, not only would it be compatible with science, but it would itself be a science.

For instance, those versions of Christianity which attempt to prove the resurrection of Christ, the creation of the world as accounted for in Genesis 1-3, etc., could all be made compatible with the empirical methods prescribed within logical positivism. (Though as we have seen, some statements would undoubtedly remain outside of the realm of what could be considered meaningful.) I think we see something like this being attempted by biblical fundamentalists like Ken Ham. But it must be granted that if the task of religion is narrowed in this way, it may become a religion which fewer Christians would be willing to embrace. That is, such a compromise comes at a high cost, for some of its key presuppositions remain unverifiable and undefinable, and consequently, meaningless. However, logical positivism as a philosophy pays the same price, for its principle of verifiability, which states “every true proposition must be empirically verifiable,” itself lies beyond the realm of verifiability and must be considered meaningless. But what is important to note is that such a religious science would not be incompatible with other sciences in principle, unless it was assumed beforehand that religious empirical propositions were inadmissible.

In any case, we have begun to rub up against the notion of what counts as “verification” for a logical positivist. In fact, it is this very problem which would become the undoing of logical positivism. Karl Popper, perhaps the most formidable critic (and heir) of logical positivism, realized that it is not as easy as positivists claim to see what counts as evidence for a proposition. Using Marxism and Freudian psychology as examples, Popper showed that it is almost always possible to interpret the world in light of a theory. For the initiated, it is possible

to see confirming evidence everywhere.²⁴ We will return to Popper in the next section. For now, we note that incompatibility between science and religion within logical positivism's scheme must rely on a narrow understanding of verification – an understanding which is not necessarily essential to a larger positivistic view.

Yet, even if such a narrow understanding of verification is required, this would not necessarily be the death-knell for religion. Support for this claim can be found within the theology of the Christian religion. Protestant theologian J. Wentzel Van Huyssteen of Princeton Theological Seminary has argued that acceptance of the rationality of logical positivism has resulted in Christian theologians, such as Karl Barth, devising their own “esoteric and peculiar conceptual model for theology.”²⁵ The irony of such a model, he claims, is that it is devised in order to escape the rationality of logical positivism while simultaneously employing the same rationality.

Using Barth as an example, Van Huyssteen develops a nuanced account of the development of such a theological model. Summarizing his arguments: theology is usually grounded on God's revelation, as it is in Barth's doctrine of the Word of God, which directly opposes positivism's demand “that no scientific statement can be accepted without testing;”²⁶ therefore theology must be distinguished from the empirical sciences, which take nature as their object. For theologians like Barth, this distinction is acceptable because the subject-matter of theology becomes a higher truth, namely God, who cannot be subjected to the objectification of scientific methods. Hence, Barth moves to reestablish God as Subject (as opposed to Object), claiming all justification of theological claims relies upon God as the Subject initiating revelation. Thus, on one level, theological inquiry looks rather different than scientific inquiry –

²⁴ Popper, “Science,” 295-97.

²⁵ Van Huyssteen, *Theology and Justification of Faith*, 11.

²⁶ *Ibid.*, 13.

theology's task is to study claims to truth made by statements purporting to be revelation, in hopes that God may once again reveal truth to the inquirer.²⁷ Ultimately, Van Huyssteen believes that such a rationality is analogous to that employed by logical positivism: the truth value of statements must still be verified; but rather than what Schlick calls "immediate experience" of the world, verification comes by the "immediate experience" of God. Such experience must, therefore, be initiated by God. It has no further rational basis, much like the logical positivist needs no further rational basis for claims once they are 'verified' in nature.

To summarize this section, we have explored the philosophy of science advanced by logical positivism, which relies on the verification principle of meaning and the division between synthetic and analytic statements. On this view, the claims of those disciplines which cannot be verified through empirical means have no truth-value apart from the analytic statements they make. Religious studies as a field, like philosophy, is only meaningful insofar as it makes true analytic statements; it is only truthful insofar as it makes true statements about empirical facts. Otherwise, religious claims simply reflect the emotions of their practitioners. We have seen that some Protestant theologians, such as Karl Barth, sought to escape these consequences by positing God as the Subject of revelation, thereby employing the rationality of logical positivism by seeking verification of truth through revelation. Following William James, it was also argued that theology can be made compatible with logical positivism if positivism takes seriously the reported experiences of religious practitioners. Whatever way one chooses to go, it should be clear that at least certain religious claims are not inherently incompatible with logical positivism. In this author's opinion, logical positivism represents the most serious challenge to religious studies, and correlates most closely to Rosenberg's claims. Yet, if a person is willing to accept

²⁷ Barth calls this the "time of recollection" and the "time of expectation." These idea occurs throughout Volume I of Karl Barth's *Church Dogmatics*. See, for instance, Karl Barth, *Church Dogmatics, Volume I, Part 2*, trans. G.T. Thomson and Harold Knight, eds. G.W. Bromiley and T.F. Torrance (New Haven: Hendrickson Pub, 2010), 45-121.

either a more limited or a more Barthian understanding of religion, positivism's challenge can be met. In the next section, we will explore the critical rationalism of Karl Popper to see if Rosenberg's claims fare any better within Popper's philosophy.

Critical Rationalism

In turning to the thought of Karl Popper, it will be important to keep before us the question of this essay: "Given critical rationalism, are science and religion thus incompatible?" With this question in mind, it will not be necessary to explore Popper's thought in nearly the depth required for logical positivism, for the answer will seem immediately apparent: they are indeed compatible. However, within critical rationalism, religious claims will look much different than they did within logical positivism.

An heir of logical positivism, much of Popper's philosophy (like all philosophy) is a critical response to this received view. Popper realized that logical positivism depends on the *principle of induction*, i.e. the inference that particular observations and their derived scientific theories are universally generalizable.²⁸ Positivists knew that such an inference is problematic, for it is not clear how an inference can be logically justified or under what conditions. This problem is the well-known *problem of induction*. Scientists assume the principle of induction to be true in order to do their work; philosophers are forever trying to justify it.

Popper sidesteps this issue by contending that "a principle of induction is superfluous" and "insurmountable."²⁹ Instead, he argues for a deductive method that talks of a theory being verified after it has been empirically tested – but only until the next test. Consequently, unlike the positivists, he is willing to concede that the means by which scientific discoveries/theories

²⁸ Karl Popper, *The Logic of Scientific Discovery* (New York: Basic Books, 1959), 27.

²⁹ *Ibid.*, 28.

develop are irrelevant and always contain “an irrational element;”³⁰ however, their justification, in order to be scientific, must proceed case-by-case, and will always be rational. He identifies four critical methods of engagement: 1) logical comparison of the deductions made within a system of theories (test for consistency); 2) analysis of the form of a theory to see if it is empirical in nature or tautological (form criticism); 3) comparison with competing theories (test for superiority); 4) investigation of a theory’s applications (test for applicability).³¹ Because the theoretical conclusions being examined are creative constructs of human reason (and not hard facts), Popper’s is a critical rationalism.

The goal of such critical, rational analysis is to compare logical deductions to the results of experiments. If singular experiments confirm a theory’s deduced conclusions in this instance, then the theory is provisionally *verified* (until the next test). If the conclusions are *falsified* by experiment, then the theory itself from which the deductions are made is *falsified*.³² Thus, a theory can never be finally true or proven; it can only be *corroborated*.³³ Theories which are falsifiable in this way are subject to Popper’s “criterion of falsifiability,” a criterion used to solve the problem addressed earlier in this essay, namely, the “problem of demarcation” between ‘science’ and other disciplines.³⁴ In other words, the *falsifiability criterion* is never used to establish the truth of a theory; it is only used to distinguish scientific theories from pseudoscientific ones.

This point must be stressed, for another popular sentiment in American culture is that “religious studies” as a discipline – and especially the claims of a religion’s adherents – stands discredited because it cannot be falsified. In Rosenberg’s work, for instance, his tone suggests

³⁰ Ibid., 32.

³¹ Ibid., 33.

³² Ibid., 34.

³³ Ibid., 431.

³⁴ Popper, “Science,” 300.

that because religious claims cannot be disproved, they stand on the same ground as beliefs in Santa Claus. Such marginalization of religious claims often makes explicit reference to the *falsifiability criterion* of Karl Popper, though Rosenberg is wise enough to only imply it. Yet, to view religious studies and science as incompatible on these grounds is to misunderstand what the *falsifiability criterion* attempts to do. Popper claims he is not worried about problems of truth!³⁵ Rather, if a theory is found to be “non-scientific” by the *falsifiability criterion*, “it is not therefore found to be unimportant, or insignificant, or ‘meaningless,’ or ‘nonsensical.’”³⁶ Instead, it is simply “non-scientific.”

Thus, unlike Schlick’s logical positivism, which equates truth in general with the claims of ‘science,’ thus narrowing a religion’s ability to make truthful and meaningful claims, Popper’s critical rationalism opens the door wide for religious claims. In this view, religion’s non-scientific claims may or may not be true – that is not for science to decide, nor can it. These claims are not incompatible with science, nor are they meaningless. Indeed, a student of Popper might infer that religious studies, though perhaps not a science on Popper’s grounds, is important work. It is about weighing, comparing, and contrasting claims like “God exists” and “Santa Claus exists.” A student of religion is not content to reduce such statements to meaningless religious gibberish, and Rosenberg seems content to do.

However, trouble will indeed arise for religious, empirical claims which are in principle scientifically falsifiable. For instance, the religious claim that Jesus will one day return in the clouds to rapture away his church can be *verified*; if the world ends before that day, this claim will stand *falsified*. But supposing this theological conclusion is falsified, is the theology behind

³⁵ Ibid., 296.

³⁶ Ibid., 299.

it necessarily falsified as well? Further, would those who hold this view simply have to give it up?

Such questions would cause the later Popper to revise his philosophy. They would also open the door for philosophers like W.V.O Quine, Paul Feyerabend, Imre Lakatos, and historian of science Thomas Kuhn, to name a few. In his essay of 1953, “Two Dogmas of Empiricism,” Quine critiques the empiricism of Rudolph Carnap and others – an empiricism relied upon by logical positivism. Quine argues for what philosopher Pierre Duhem had called “holism” long before logical positivism was in vogue (Quine does not use this term, and indeed, was originally unaware of Duhem’s work). Against positivistic empiricists, Quine asserts after substantial argumentation: “The unit of empirical significance is the whole of science.”³⁷ Quine shows in principle the interconnectedness of all theories by erasing the analytic/synthetic distinction of positivism. His arguments are too detailed to recount here, but their consequence is the “underdetermination” of all sense data. By thinking of the totality of one’s knowledge as a “field of force,” we can imagine that only the edges of that field actually touch experience. These edges, or boundary conditions, are thus underdetermined by the data.³⁸ That is, multiple “fields of force” can share the same edge (experience), yet interpret this data differently according to their respective systems. In other words, behind any empirical (scientific) theory is an interconnected web of theories that may not themselves “touch” experiential data, but which give different meanings to this data. Consequently, Quine claims: “Any statement can be held true come what may, if we make drastic enough adjustments elsewhere in the system.”³⁹

³⁷ W.V.O Quine, “Two Dogmas of Empiricism” in *Philosophy of Science: Contemporary Readings*, eds. Yuri Balashov and Alex Rosenberg (New York: Routledge, 2002), 356.

³⁸ *Ibid.*, 356-7.

³⁹ *Ibid.*, 357.

Quine's theory also complicates Popper's notion of falsifiability. If it is true that a statement can be held true no matter what, it would be possible for our premillennial Christian to maintain the assertion, "Jesus will come in the clouds to rapture his church," even though the world end beforehand. This Christian need only modify some other theories within the system, such as what is meant by "rapture" or the "end of the world." The upshot of Quine's thought is, contra-Popper (whose work came after Quine's), that it is by no means clear at what point a theory can be considered falsified.

Working from the perspective of a historian, Thomas Kuhn implicitly corroborated Quine's philosophy in his study of the nature of scientific revolutions.⁴⁰ He argues that in practice, scientific theories are 'falsified' all the time! Yet, such 'falsification' usually reflects poorly on the scientist, not the theory. In other words, it is normally assumed that the scientist has made an error before it is assumed that the theory itself is wrong. Or, the attempt at 'falsification' merely presents a puzzle to be solved. Historically, it is only after a number of unanswerable problems build that a crisis emerges, leading to a scientific revolution and a change of "paradigm." (For our purposes, we may think of "paradigm" as Quine's "fields of force," so that a paradigm-shift is equivalent to changing the "field of force" in which one works).

Kuhn and the philosophers following in his wake revolutionized the philosophy of science. But if the ideas in this section are correct, the end of logical positivism began with the critical rationalism of Popper. It was Popper who opened the door for theology by emphasizing (and sidestepping) the problem of induction. Ever since Popper, it has not at all been clear why religion and 'science' should be considered incompatible.

⁴⁰ Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 3rd ed. (Chicago, IL: University of Chicago Press, 1996).

Conclusion

This essay has explored the compatibility of two major philosophies of science with religion.

These philosophies, though largely discredited by the philosophical community in their original forms, still persist in the culture today (and according to my scientist friends, even among scientists). Of course, data would need to be collected to substantiate this claim, but if this writer's experience is any indicator, many readers can relate. In any case, some strange mixture of these philosophies is present in the writing of philosopher Alex Rosenberg. His claim that 'science' and 'religion' are incompatible was examined within these two schools, and found to be unwarranted on those grounds. Instead, it was shown that religious claims, and especially the study of those claims, may indeed be compatible with 'science.' Following Quine, I would suggest that a religion can be made compatible with any 'edge' it encounters in the shape of a philosophy of science. But such an argument must wait for a longer essay.

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