

Original Paper

The Relationship between Science and Religion: Complexity

Rules the Day, and Many Windows and Maps Are Needed

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Abstract

In a recent paper, Kowalski and Mrdjenovich (2017) advised against indiscriminate dichotomization. We looked at nature vs nurture, reductionism vs holism, and several of the ways the scientific pie could be sliced in two pieces, basic vs applied, physical science vs social science, etc., arguing that focusing on one or the other of two dichotomous choices often deflects attention from a more fertile intermediate ground where more useful answers might be found, and that a better classification scheme than the basic/applied opposition would depend on the nature of the question being asked and the manner in which an answer is sought. We even ventured to include science vs poetry, recognizing that the two are often taken to be the very embodiment of polarity, the cold of rationality vs the heat of emotion. Thus we approached, but did not directly confront the elephant in the room: Science vs Religion. I attend to this now.

Keywords

dichotomies, humanism, scientific pluralism, New Atheists, NOMA, Gaia

1. Introduction

In the beginning, Man created religion. And so it came to pass that, at a later time, and for somewhat different purposes, they invented science. Both religion and science found fertile ground and vigorous growth ensued; growth of one was usually unimpeded by the growth of the other, and they both currently play prominent roles in the human enterprise. I do not summarize here the long histories of either religion (Note 1) (Armstrong, 1993), or science (Wootton, 2015), but rather focus on their relationship(s) over time (Fergren, 2017). I begin by noting that the relationship between science and

religion, S&R, is not independent of time and place and context. For example, Weldon (2017) notes that not only is what we currently think of as the science-religion narrative a Western invention, it is also a modern story: Before 1600, neither the word “science” nor the word “religion” had its current meaning (p. 5). According to the *OED*, the term “scientist” was first used in 1834 by the naturalist-theologian William Whewell and applied to those who sought knowledge and understanding of nature. I do not dwell on S&R during this period, but note that much of 19th century history was dominated by the works of the two American polemicists John William Draper (1874) and Andrew Dickson White (1896) who emphasized the warlike nature between S&R. This view is kept alive today by such well-known examples as Galileo’s imprisonment (Blackwell & Shank, 2017) and the Scopes trial (Larson, 2017), but these have proven to be exceptions (“occasional hiccups”) rather than the rule (Ferngren, 2017, p. xi). Ronald Numbers (2009) describes 25 myths about science and religion, and he claims, “The greatest myth in the history of science and religion holds that they have been in a state of constant conflict” (p. 1). He attributes this to the influence of Draper (an accomplished physician, chemist and historian) and White (president of Cornell University), but concludes, “Historians of science have known for years that White’s and Draper’s accounts are more propaganda than history” (p. 6).

In any case, the antagonistic view of S&R dominated most of the 19th century and this, while persisting in some quarters to the present day, has admitted other characterizations to be considered as well. For example, Haught (1995, p. 9) listed four distinct ways in which science and religion can be related to each other:

- 1) *Conflict*—the conviction that science and religion are fundamentally irreconcilable;
- 2) *Contrast*—the claim that there can be no genuine conflict since religion and science are each responding to radically different questions;
- 3) *Contact*—an approach that looks for both dialogue and interaction, and possible “consonance” between science and religion, and especially for ways in which science shapes religion and theological understanding; and
- 4) *Confirmation*—a somewhat quieter but extremely important perspective that highlights the ways in which, at a very deep level, religion supports and nourishes the entire scientific enterprise.

A similar four-tiered taxonomy was proposed by Barbour (1997, 2000) with the dimensions labeled *Conflict*, *Independence*, *Dialogue*, and *Integration*. The first two are the same as Haught’s; and Haught’s *Contact* essentially combines Barbour’s *Dialogue* and *Integration*. Haught’s *Confirmation* seeks to justify some of science’s use of background assumptions as being originally derived by theology, e.g., the most basic assumption of all—a belief in the rationality and intelligibility of the natural world. This idea has a long history: Fuller (2007, p. 30) noted that Kant, in his *Critique of Pure Reason*, did not justify God’s existence per se, but that belief in God’s existence was a necessary precondition for the rationality of the scientific enterprise. He thought that “the full realization of our humanity depends less on God’s existence than our assumption that God exists” (p. 56).

S&R has been thought to have more and fewer dimensions. Barbour (2000, p. 4) described taxonomies with 8- and 9-tiers, and Ferngren (2017), upon reviewing the scene, concluded that there are three main theoretical frameworks that have looked at the relationship between science and religion: (1) *Conflict* between the disciplines, (2) *Independence* of the disciplines, and (3) *Dialogue* between the disciplines where they overlap. This is closely related to another three-tiered framework that I will have cause to consider later, so it is included here: Shermer (1997) proposed a three-tiered taxonomy, viz., (i) The *same-world* model, (ii) The *separate-worlds* model, and (iii) The *conflicting-worlds* model.

However, instead of focusing on three-tiered models, pitting one against the others, Ferngren (2017) emphasized *complexity*. The so-called “complexity thesis” began by again pointing out that the idea that science and religion have been at war throughout history is fatally flawed, and arguing that no *single* alternative structure would suffice as the basis for a histogeographical S&R model (Brooke, 1991). The complexity thesis implies that we need to take time and place into account if we are to properly characterize the relationship between science and religion. This does not mean, however, that simply fixing time and place makes the religion and science relation *simple*. And, while honoring the complexity requirements has produced much good scholarship, it has, by fixing time and place, focused attention to the exclusion of the “big picture” that which might capture some global tendencies of interest (Harrison, 2015).

In any case, I agree with the critics who have suggested that S&R is too complex and too context dependent to be grouped under any single classification scheme. I honor S&R’s time dependence by focusing on the present and further limit discussion to what may be a distinctive American view. I recognize that this limits my view of the “big picture” to the here and now, but as will become clear, this is complex enough and will occupy all of the space available to me for discussion.

Fast-forward to the modern era ... I follow Smedes (2008) and take Ian Barbour’s book *Issues in Science and Religion* (1966) as the starting point of the S&R dialogue as we know it today—a field in which scholars from the sciences and theology attempt to define and develop the relationship between science and a religious (mainly Christian) worldview.

2. S&R: The Current American View(s)

I suggest that a good way to capture current thinking about a topic is to select from a number of the cartoons from that period dealing with said topic (I believe I have learned more about “laboratory life” from Gary Larson’s “Far Side” cartoons—that are understandable, illuminating and memorable—than from reading Bruno Latour). The following has ©John Atkinson which is available at <https://wronghands1.files.wordpress.com/2017/08/science-vs-religion.jpg>

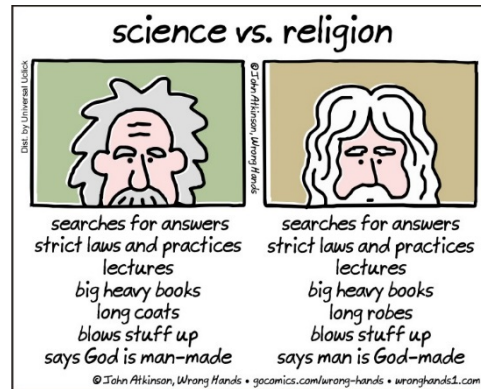


Figure 1. Cartoon Depicting Relationship between Science and Religion

At first glance, there would appear to be more similarities than differences; one difference being sartorial, the other a disagreement about who begot whom. One of the presumed similarities—both science and religion are involved in a search for answers—obscures some important differences: answers to *what* questions and *how* answers are sought.

When surveying the current views of S&R in the United States, it does not take long to discover that all of the views alluded to above can be represented when considering a given question and that the particular representation chosen can color the impressions so obtained. For example, concentrating on just the four-tiered frameworks mentioned above (Haught and Barbour), each of these authors compared and contrasted the conclusions reached about many of currently controversial issues being debated when each of the frameworks was employed to seek understanding. Thus, Haught (1995) considered such questions as “Does science rule out a personal God?”, “Is life reducible to chemistry?”, “Was the universe created?”, and “Is religion responsible for the ecological crisis?”. He details the ways in which each of the four frameworks of conflict, contrast, contact, and confirmation would approach these questions and compares the sorts of answers they would produce. Similarly, Barbour (2000) assumes the conflict, independence, dialogue, and integration positions in addressing questions grouped under the headings of “astronomy and creation”, the “implications of quantum physics”, “evolution and continuing creation”, and “genetics, neuroscience, and human nature”. Again, while the model adopted surely colors the conclusions reached, the differences noted are more a matter of emphasis, few out-and-out contradictions are apparent.

Nonetheless, both Haught and Barbour make it clear that they do not favor the first two (conflict and independence) models, and note that the conflict model may be mis-specified: it may not be *science*, but scientism (the belief that science is the *only* reliable guide to truth) that is the enemy of religion. Also see Plantinga (2011).

For purposes of my discussion, I focus on Shermer’s three-tiered model as depicted below (Figure 2):

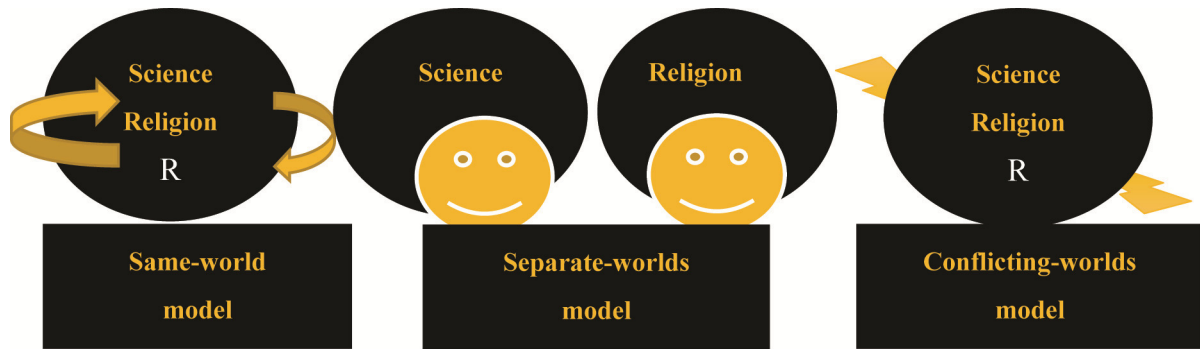


Figure 2. Shermer's Three-Tiered Model of S&R

According to Shermer (1997, pp. 137-138), in the *same-worlds model*, science and religion deal with the same subjects, and not only is there overlap and conciliation, but he thinks that, someday, science may subsume religion. In the *separate-worlds model*, science and religion deal with different subjects, do not conflict or overlap, and the two should peacefully coexist. In the *conflicting-worlds model*, science and religion deal with the same subjects (as in the same-worlds model), but one is right and the other is wrong, and there can be no reconciliation between the two viewpoints.

I address these in the order separate-worlds (Peace Talks), conflicting-worlds (The Dominant View: Open Warfare), and same-world (GAIA: Many Windows and Maps) in the following sections.

3. Peace Talks

Blessed are the peacemakers, for they will be called the children of God.

Matthew 5:9

When one looks at arguments in favor of the independence (separate-worlds) model, the most often cited are connected to Stephen Jay Gould's concept of NOMA; indeed, Gould is recognized (along with Darwin) as all but synonymous with his model by Shermer (1997, p. 138). But some care is needed in establishing this connection. In fact, I will argue that NOMA is best understood as representing different perspectives on the same world, not on different domains of inquiry, i.e., not on separate worlds. Gould (1998) first introduced the concept of NOMA, Non-Overlapping MAgisteria, to explain why science and religion are not in conflict with one another: "The *lack of conflict* between science and religion arises from a *lack of overlap* between their respective domains of professional expertise—science in the empirical constitution of the universe, and religion in the search for proper ethical values and the spiritual meaning of our lives" (p. 271).

He explains (p. 274): "The net of science covers the empirical realm: what is the universe made of (fact) and why does it work that way (theory). The net of religion extends over questions of moral meaning and value. These two magisteria do not overlap, nor do they encompass all inquiry (consider, for starters, the magisterium of art and the meaning of beauty). To cite the usual clichés, we get the age of

rocks, and religion retains the rock of ages; we study how the heavens go, and they determine how to go to heaven”.

He then goes on to devote an entire book to defining, illustrating, and defending NOMA (Gould, 1999). He notes that, “the two magisteria ... belly right up to each other, and interdigitate in the most intimate and complex manner”. Science and religion “ask different, and logically distinct questions—but their subjects of inquiry are often both identical and maximally meaningful” (p. 110).

The basic tenants of NOMA have been accepted by several prominent scientific societies, e.g., the American Association for the Advancement of Science and the USA’s National Academy of Science. As noted and discussed by Nelkin (2000, p. 18), according to the American Association for the Advancement of Science (AAAS), the differences between science and religion have to do with the kind of questions asked: “Science is about causes, religion about meaning. Science deals with how things happen in nature, religion with why there is anything rather than nothing. Science answers specific questions about the workings of nature, religion addresses the ultimate ground of nature”. [From AAAS Program of Dialogue between Science and Religion, brochure, 1995].

The USA’s National Academy of Science also supports the view that science and religion are independent:

“Science and religion are based on different aspects of human experience. In science, explanations must be based on evidence drawn from examining the natural world. Scientifically based observations or experiments that conflict with an explanation eventually must lead to modification or even abandonment of that explanation. Religious faith, in contrast, does not depend on empirical evidence, is not necessarily modified in the face of conflicting evidence, and typically involves supernatural forces or entities. Because they are not a part of nature, supernatural entities cannot be investigated by science. In this sense, science and religion are separate and address aspects of human understanding in different ways. Attempts to pit science and religion against each other create controversy where none needs to exist”. [“Evolution Resources: Compatibility of Science and Religion”. *Science, Evolution and Creationism*. National Academies of the United States, 2008].

Yet another vote in favor of NOMA was cast by Francisco Ayala (2007). Much like Gould, Ayala’s book delivers the message: “Science and religious beliefs need not be in contradiction. If they are properly understood (Note 2), they *cannot* be in contradiction because science and religion concern different matters” (ix). He touches directly on Gould’s NOMA when he repeats (p. 162), “If they are correctly assessed, they *cannot* be in contradiction, because science and religion concern non-overlapping realms of knowledge. It is only when assertions are made beyond their legitimate boundaries that evolutionary theory and religious belief appear to be antithetical”.

He also quotes the National Academy of Sciences (p. 174), “Religion and science answer different questions about the world. Whether there is purpose to the universe or a purpose for human existence

are not questions for science ... Consequently, many people, including scientists, hold strong religious beliefs and simultaneously accept the occurrence of evolution”.

Ayala also quotes Freeman Dyson (1979), “As human beings, we are groping for knowledge and understanding of the strange universe into which we are born. We have many ways of understanding, of which science is only one ... Science is a particular bunch of tools that have been conspicuously successful for understanding and manipulating the material universe. Religion is another bunch of tools, giving us hints of a mental or spiritual universe that transcends the material universe”.

So, if S and R address different sets of questions, and use different bunches of tools to answer them, S and R would seem to represent a dichotomy. Thus, e.g., Pigliucci (2000) referred to NOMA as Gould’s Solomonic separation of science and religion. Shermer (1997) all but identified NOMA with his separate-worlds model. Moritz (2009) also thought that NOMA was based on separating science and religion. He thought this problematic in practice, noting that the “sharp line” between science and religion has been recurrently crossed throughout history and continues to be traversed today. The line between what science can and cannot explain has a habit of shifting. The practical reality of NOMA tends to be not so much “Render to Caesar the things that are Caesar’s, and to God the things that are God’s”, as “Render to Caesar the things that are Caesar’s and to God, the things Caesar says he can have” (Note 3). Taking exception to NOMA which he views as an apartheid-like tactic, he advocates for more dialogue between S&R, “Thus, while in principle one may reassuringly assert that science and religion do not overlap, in historical and philosophical reality and contemporary practice it remains quite a difficult task to tease these two apart. Ignoring this fact advances the cause of neither theology nor science. Embracing their creative engagement and interaction, though, might just unveil the path that leads to new heights of discovery for both” (p. 374). It seems fair to say that many commentators interpret NOMA as based on a true dichotomization of science and religion. This tendency towards dichotomization has a long history, and in fact is typical of the kind of thinking humans do (Midgley, 2010) and any such “posits an incurable split between two aspects of the human psyche. This gulf may be located between theory and practice, or between ‘hard’ and ‘soft’ thinking, or again between the arts and sciences, between facts and values, between objective and subjective, between science and religion or even between men and women” (p. 73).

The question of dichotomization is one of several aspects of NOMA that require careful interpretation. Others are that Gould doesn’t really mean what he’s saying, that it’s all an accommodationist tactic to stop the warfare between S&R; that “no conflict” seems to imply “nothing to talk about”, either; that “religion” needs careful definition; and that, instead of NOMA, S&R have differing perspectives on a common domain rather than differing domains of inquiry.

I begin with the dichotomization question. Those who know something of the history of Stephen Jay Gould should know better, viz., Gould (1981, p. 27) is famously on record as calling dichotomization one of “the oldest issues and errors of our philosophical traditions” (along with dichotomization, he demonizes reductionism, reification, and hierarchy). And Gould in fact takes care not to dichotomize

science and religion *writ large*. He does put their respective domains of expertise into separate, non-overlapping bins, i.e., science knows about *how*; religion knows about *why*, but as he recognizes, “their subjects of inquiry are often both identical and maximally meaningful” (Gould, 1999, p. 110). He goes on to argue that “all too often, when making sense of the relationship between two disparate subjects, we assume that one of two extreme solutions must apply: either science and religion must battle to the death, with one victorious and the other defeated; or else they must represent the same quest and can therefore be fully and smoothly integrated into one grand synthesis” (p. 51). He then suggests that “these two domains hold equal worth and necessary status for any complete human life; and ... they remain logically distinct and fully separate in styles of inquiry, however much and however tightly we must integrate the insights of both magisteria to build the rich a full view of life traditionally designated as wisdom” (p. 59).

Thus Gould views S&R as complementary (rather than opposing) forces that interact to form a dynamic system in which the whole is greater than the assembled parts, i.e., yin and yang. He asks, “From Mutt and Jeff to yin and yang, all our cultures, in their full diversity of levels and traditions, include images of the absolutely inseparable but utterly different. Why not add the magisteria of science and religion to this venerable and distinguished list?” (p. 67).

And, contra to Dawkins, I tend to believe that Gould is a man of his word. Dawkins (2006) writes “Gould carried the art of bending over backwards to positively supine lengths in one of his less admired books, *Rocks of Ages*” (p. 78). “I simply don’t believe that Gould could possibly have meant much of what he wrote in *Rocks of Ages*” (p. 80). It’s as though Gould was after “peace at any price”, but this conclusion can be had only by ignoring much of what Gould actually had to say (And, again, it can be had only by ignoring Gould’s track record).

For example, in answer to those citing NOMA as a mere peace-keeping, accomodationalist strategy (Coyne, 2015), Gould (1998, p. 92) replies: “NOMA is no wimpish, wallpapering, superficial device, acting as a mere diplomatic fiction and smoke screen to make life more convenient by compromise in a world diverse and contradictory passions. NOMA is a proper and principled solution—based on sound philosophy—to an issue of great historical and emotional weight. NOMA is tough-minded. NOMA forces dialogue and respectful discourse about different primary commitments. NOMA does not say ‘I’m OK, you’re OK—so let’s just avoid any talk about science and religion’”.

This need for dialogue is an important aspect of NOMA, and takes care of the worry that “no conflict” also “rules out the possibility of constructive dialogue and mutual enrichment” (Barbour, 1997, p. 80). Gould (1998, p. 283) is emphatic about this: “Here, I believe, lies the greatest strength and necessity of NOMA ... NOMA permits—indeed enjoins—the prospect of respectful discourse, of constant input from both magisteria toward the common goal of wisdom” (p. 283). Not only is a magisterium “a site for dialogue and debate, not a set of eternal and invariable rules” (p. 61), the same holds true for contact between the magisteria.

With regards to the definition of religion, I agree with the need to be careful: Calling out, naming and defining science and religion may not be as straightforward a task as it may seem. In particular, consider the identification of religion with “the search for proper ethical values and the spiritual meaning of our lives”. One can question whether religion is the *only* (or even an *effective*) way to conduct this search. Why *religion* and not *philosophy*? Religion may not be the *only* or even a *viable* quest for ethics: In fact, it may not be a *quest* at all to the extent that it is based on arbitrary sets of rules and the enforcement of dogmas. Gould also has anticipated this: “This magisterium [religion] of ethical discussion and search for meaning includes several disciplines traditionally grouped under humanities—much of philosophy, and part of literature and history, for example. But human societies have usually centered the discourse of this magisterium upon an institution called ‘religion’” (pp. 55-56) ... “while every person must formulate a moral theory under the magisterium of ethics and meaning, and while religion anchors this magisterium in most cultural traditions, the chosen pathway may not invoke religion at all, but may ground moral discourse in other disciplines, philosophy for example” (p. 60).

Finally, I consider Barbour (1997) who noted that instead of NOMA, some have suggested that science and religion have differing perspectives on a common domain rather than differing domains of inquiry (p. 84). Rather than identifying NOMA with the independence, nothing to do with one another model, we recognize S and R as offering different perspectives on a common domain (the one-world model); and this is the attitude adopted here. I “stop considering a human being as a hybrid and treat it as a whole that can be properly examined from many different aspects” (Midgley, 2000, p. 82).

To assume the (two-worlds) independence-model is one thing. To conclude that the independence model obtains because the two camps pose different questions is to confuse ontology (what there is to know) and epistemology (how we can get to know it). This muddling of the issues of ontology and epistemology has been a persistent problem in philosophy. To assume that questions in ontology can be reduced to questions in epistemology is to commit the “epistemic fallacy”, as would occur were one to conclude that two worlds exist because two distinct sets of questions were being pursued. Thus I dismiss the two-worlds model in favor of a one-world model that can be studied from various perspectives (and, I claim, that this is also the position argued for by Gould and NOMA, but one has to be sure to read *all* of Gould’s presentation to appreciate the distinction).

I want to be careful here to not push the “differing perspectives” so far as to just create a new dichotomy. Plantinga (2011) also thought the “differing perspectives” model to be appropriate, but looked for similarities in perspectives rather than differences. He cited John Worrall who started with the notion that there is just one world (ontological assumption) but stressed the profound contrast between the *epistemic styles* of religion and science (p. 122): The scientist holds her beliefs tentatively, dispassionately, only on the basis of evidence, and is always looking for a better hypothesis, one that is better supported by the evidence. The religious believer, on the other hand, typically holds his beliefs dogmatically: he is unwilling to consider the evidence and often holds his beliefs with a degree of

firmness out of proportion to their support by evidence; he is unwilling to look for a better hypothesis. Plantinga gives a Niels Bohr vs Erwin Schrodinger counterexample to the “dispassionate” claim, one that may be duplicated in the field with I am most familiar, viz., statistics (Karl Pearson vs R.A. Fisher; the Bayesians vs. the Frequentists). Plantinga also points out that the whole notion that all epistemic activity *should* mirror that exhibited in science is not a scientific finding at all—it is *opinion* most commonly detected within the scientific community. As put by Paul Feyerabend (1975, p. 220), “Scientists are not content with running their own playpens in accordance with what they regard as the rules of the scientific method; they want to universalize those rules, they want them to become part of society at large”.

4. The Dominant View: Open Warfare

War, n. A by-product of the arts of peace. The most menacing political condition is a period of international amity. The student of history who has not been taught to expect the unexpected may justly boast himself inaccessible to the light.

Ambrose Bierce's The Unabridged Devil's Dictionary.

When I choose to call the Conflicting-worlds model the currently dominant view of S&R, I am responding to the amount of heat generated, not light (Note 4). The so-called New Atheist movement is responsible for most of the action, led by the “four horsemen” Richard Dawkins, Daniel Dennett, Sam Harris, and Christopher Hitchens, and such prominent followers as Dan Barker, Jerry Coyne, and Stephen Weinberg, etc. They are most vociferous in their attacks on religious fundamentalists, especially those espousing the literal truth of such works as the Bible, the Koran, and Tanakh, but they target all aspects of religion, arguing that there is no way that one can be *both* properly scientifically-minded, *and* a true religious believer. They believe that science will eventually unravel all of the mysteries surrounding human existence, thereby rendering religion unnecessary, and will be happy to shout “good riddance”. Dennett (2006, p. 25) said, “religion is natural as opposed to *supernatural*, that it is a human phenomenon composed of events, organisms, objects, structures, patterns and the like that all obey the laws of physics or biology, and hence do not involve miracles”. Hitchens (2007, p. 281) claimed, “Religion has run out of justifications. Thanks to the telescope and microscope, it no longer offers an explanation of anything important”.

To set the stage for this drama, I begin with Dan Barker’s book, *God: The most unpleasant character in all of fiction*, an outgrowth of a remark made by Richard Dawkins in *The God Delusion* to the effect that the God of the Old Testament is “arguably the most unpleasant character in all fiction”. ... “jealous and proud of it; a petty, unjust, unforgiving control-freak; a vindictive, bloodthirsty ethnic cleanser; a misogynistic, homophobic, racist, infanticidal, genocidal, filicidal, pestilential megalomaniacal, sadomasochistic, capriciously malevolent bully”. Barker devotes the nineteen sections of Part I of his book (“Dawkins Was Right”) to illustrating each of these characteristics and in Part II (“Dawkins Was Too Kind”) he extends the list to include such things as pyromaniacal, angry, merciless, and, even,

cannibalistic. He then points out that these descriptors apply as well to the Jesus of the New Testament, just a chip off the old block. In the same vein, Chapter Eight of Hitchens (2007) is titled *The “New” Testament Exceeds the Evil of the “Old” One*.

This, then, is the view of the Bible taken by the New Atheists, and it, together with such other representatives as the Koran and Tanakh, is seen as the seed of an aggressive stance assumed by the various religions, apparently just begging for retaliation. Harris (2004, p. 13) notes that “most of the people in this world believe that the Creator of the universe has written a book ... we have the misfortune of having many such books on hand, each making an exclusive claim as to its infallibility”. Harris does not believe “true believers” are capable of an ecumenical stance toward either other religions or those harboring no belief at all: “... respect for other faiths, or for the views of unbelievers, is not an attitude that God endorses. While all faiths have been touched, here and there, by the spirit of ecumenicalism, the central tenet of every religious tradition is that all others are mere repositories of error or, at best, dangerously incomplete. Intolerance is thus intrinsic to every creed. Once a person believes—*really* believes—that certain ideas can lead to eternal happiness, or to its antithesis, he cannot tolerate the possibility that the people he loves might be led astray by the blandishments of unbelievers” (p. 13). There is no doubt that Harris “really believes” this, but he apparently is not afraid that *this* constitutes dogmatism.

Jerry Coyne (2015) demonstrates that the other side can be intolerant as well. He says (p. 64) that science and religion are *incompatible* because they have different methods for getting knowledge about reality, have different ways of assessing the reliability of that knowledge, and, in the end, arrive at conflicting conclusions about the universe. He wants to distinguish his view from much of the earlier literature on the S&R relationship, which he calls “accommodationist” (Dawkins uses the term “the Neville Chamberlain approach”). He notes that (p. 17) that there has been a recent upsurge in accommodationism that has been funded by the John Templeton Foundation who believe that science and religion can be partners in solving “big questions” of purpose, meaning and values. He rejects NOMA (p. 106), calling it a gambit, and recognizing that it is perhaps the most common argument for the compatibility of science and faith. He also classifies NOMA as among the accommodationist genre, and cites statements from the National Academies and the National Science Teachers Association as other representatives.

John Worrall (2004) is another who claims S&R are incompatible: “Science and religion are in irreconcilable conflict. ... There is no way in which you can be *both* properly scientifically minded *and* a true religious believer” (p. 60). An opposing view is given by Del Ratzsch (2004). The debate then continues with Worrall responding to Del Ratzsch and with Del Ratzsch supplying the last word (Peterson & VanArragon, 2004, pp. 87-94). One is struck by the complexity of the issue: the back-and-forth format emphasizes the fact that both sides have been well thought out, and both have something to contribute to the conversation.

Another debate-type format considering the compatibility question—and endorsing the complexity thesis—is Dennett and Plantinga (2011). This is a book in the *Oxford University Press* point/counterpoint series pitting one of the four horsemen against a well-known Professor of Philosophy at the University of Notre Dame. It is an interesting read on many accounts, only one will be mentioned here. Dennett thinks NOMA (separate-worlds model) hurts science; Plantinga thinks the conflicting-worlds model does, albeit in different ways. Dennett asserts,

“... my disapproval of the NOMA gambit grows out of the worry that these attempts by well-meaning scientific diplomats [Gould] do more harm than good, unwittingly convincing many laypeople that scientists will lie through their teeth to get evolution taught in the schools” (p. 50). And, according to Plantinga, “Insofar as Dennett and others proclaim conflict between evolutionary theory and theistic belief, they exacerbate this distrust of evolution—a distrust that spills over to science itself, with a consequent cost in public support of science” (p. 63). Yet another *who is hurting whom* debate is between Mooney and Kirshenbaum (2009) and Harris (2010). Harris takes exception to the suggestion that “if the goal is to create an America more friendly toward science and reason, the combativeness of the New Atheists is strongly counterproductive” (Mooney & Kirshenbaum, 2009, p. 97), reacting by saying “Mooney and Kirshenbaum seem to imagine that we can get people to value intellectual honesty by lying to them” (p. 175). And the beat goes on ...

Another influential critique of the New Atheists’ creed is given by Haught (2008). He devotes two chapters (1 and 2) to the questions: “How New Is the New Atheism?” and “How Atheistic is the New Atheism?” and concludes that it has all been said before, with even more gusto than that mustered by the new kids on the block. He points to some “real” atheists who preceded them, e.g., Freud, Camus, Nietzsche, Russell and Sartre. He suggests that the New Atheists have tempered their rhetoric because they want to prevail at the least possible expense to the agreeable socioeconomic circumstances out of which they sermonize.

He takes on the New Atheists’ penchant for referring to themselves as “brights” thereby distinguishing themselves from their not-so-bright religious opponents (p. 43). He notes that Dennett (2007, p. 55) denies that “bright” signifies superiority, but it is hard to believe that they couldn’t have thought of another descriptor had they wanted to. In any case, the term has caught on and has even sparked a “Brights movement” whose interesting history may be traced at www.the-brights.net

He also points to Dawkins and his disciples’ overuse of Occam’s razor when they argue that when scientific answers are simpler, they are to be preferred over others which may be more complex. William of Occam said that explanations should not be multiplied beyond necessity; but Haught claims that sometimes *it is necessary* to have a plurality of levels of explanation (p. 89).

He wants to adopt a less adversarial stance than the New Atheists, but he cannot always keep his resolution. For example, when discussing Hitchens’ and Harris’ interpretations of certain inconsistencies found in the Bible, he calls their reading “an exceptional display of cognitional, ethical, and exegetical abstemiousness” (p. 104), fighting words if there ever were any.

Another challenge to the New Atheists was delivered by Kitcher (2011). Kitcher takes on the militant modern atheists (the four horsemen), charging that their view is incomplete (and likely counter-productive) so long as it fails to attend systematically to the roles religion plays in human lives. He has no problem with their attacking the *beliefs* on which religious fundamentalists rely, but there is more to the issue than that. The challenge is to develop a well-articulated and convincing version of *secular humanism* which, he claims, is one of the central problems of philosophy today.

Dennett and LaScola (2015) fire back: “As Kitcher’s well-intentioned imaginative attempt to avoid hypocrisy clearly shows all too vividly, there is no stable stopping point on the slippery slope between being patronizing, on the one hand, and uneasy complicity with unacceptable nonsense on the other” (p. 192).

Both sides apparently want the last word, and we therefore do not expect the fighting to end any time soon. Dawkins talks about why the New Atheists are (properly) so confrontational. While denying any inborn tendency towards confrontation, and while recognizing the adversarial format is not well designed to get at the truth, he defends his hostility as necessary in defense of science (Dawkins, 2006, p. 317). Just as Chamberlain needed to give way to Churchill to effectively confront Hitler in the defense of freedom, so too the four horsemen are needed if we are to properly defend the scientific magisterium (c.f., Ruse, 2007). But not to worry: “[S]uch hostility as I or other atheists occasionally voice towards religion is limited to words. I am not going to bomb anybody, behead them, stone them, burn them at the stake, crucify them, or fly planes into their skyscrapers” (Dawkins, 2006, p. 318).

But maybe, just maybe, we need not choose between one or the other of these extreme positions. It may be more illuminating to explore the more fertile intermediate ground where more useful answers may be found. Indeed, without abandoning any of their core beliefs, some of the new atheists have taken Kitcher’s challenge to heart, and have directed their talents to developing “a convincing version of secular humanism”.

They noted at once that they would need to address the apparent power of “belief in belief”. It’s just that many people seem to believe that their belief in God is beneficial to them. It’s as though there would be no reason to be good if God-the-policeman was not around. This attitude is captured by the refrain from Peggy Lee’s popular song “If That’s All There Is”:

Is that all there is, is that all there is
If that’s all there is my friends, then let’s keep dancing
Let’s break out the booze and have a ball
If that’s all there is

Chapter eight of Dennett (2006) is entitled “Belief in belief” and much of his discussion has root in Voltaire’s “If God did not exist, it would be necessary for us to invent Him”. He doesn’t believe that belief in belief is necessarily a good thing, and it certainly does not mean that either belief is true, but he at least recognizes it as a force to be reckoned with. Hitchens (2007, p. 165) agrees that “belief in belief” can be a good thing: “people can be better off believing in something than in nothing, however

untrue that something may be”. Even Dawkins (2006, p. 394) recognizes the power of “belief in belief”, but he starts to sketch the way towards a secular alternative.

Others soon joined to question whether God was a necessary part of this equation. Harris (2010) challenged the idea that “we need God to be good”, in particular, that science has nothing to say about morals, or how to lead one’s life. Pinker (2011) continues the argument: He describes his version as *enlightenment humanism*, and makes clear that, “Enlightenment humanism makes no use of scripture, Jesus, ritual, religious law, divine purpose, immortal souls, an afterlife, a messianic age, or a God that responds to individual people” (p. 183). Enlightenment humanism is not necessarily atheistic (it is compatible with a deism in which God is identified with the nature of the universe), but it has no need of that hypothesis. Shermer (2015) went even further: He argues that religion is not, and *cannot be*, the driver of moral progress.

The current state of secular humanistic development is captured by Pinker (2018). He points to the ideals of the Enlightenment era: reason, science, humanism (the goal of maximizing human flourishing—life, health, happiness, freedom, knowledge, love, richness of experience) and progress, and details the extent of which humanism has been able to promote a non-supernatural basis for meaning and ethics: good without God. His book is not without critics (search on *critiques of enlightenment now*), but it does represent the current state of development of secular humanism. Perhaps still more needs to be done, and one should not be too quick to anoint certain approaches to knowledge as the *only* acceptable route. Pinker himself seems to not completely slam the door on religiosity or, at least, spiritualism: He closes his book by noting that the story of human progress is “even, I daresay, *spiritual*”. He admits that “human nature has been *blessed* with resources that open a space for a kind of *redemption*”, and that “we are *endowed* with the power to combine ideas recursively” (p. 452, my italics). In a recent New York Times article (2/25/18), Ross Douthat notes that Pinker has drawn a bright line “between the empirical spirit of science and the unreasoning obscurantism he suggests otherwise prevails”. This “drawing of lines” is a mark of the kind of dichotomization I have been arguing needs to be avoided. Genuinely curious people are curious about *everything*, and it is certainly in the spirit of empiricism to want to see what happens, for example, if you elect to try a life-enhancing treatment that has not been subjected to a randomized, double-blind, controlled clinical trial. The FDA will deem that a less-than-scientific decision, but what if the pain actually lessens? Damn the placebos, full speed ahead...

5. GAIA: Many Windows and Maps

“[A] complete elucidation of one and the same object may require diverse points of view which defy a unique description.”

Niels Bohr’s Complementary Principle.

“We live in exactly one world, not two or three or seventeen.”

John Searle

Atkinson's cartoon includes the notion the both science and religion "search for answers". I note that while it may be possible to distinguish between science and religion on the basis of the nature of the questions being asked and the manner in which answers are sought, an even better approach might be to not even attempt making that split in the first place, but to recognize their common focus on the universe and, in particular, on the earth and its inhabitants. Even if they normally pose different types of questions; even if they usually structure their questions differently; even if they judge the veracity of their answers according to different criteria, the questions they raise are questions about the world and its inhabitants. There is but one such world. It is complex enough so that no single approach to answering all possible questions (that elusive "theory of everything") will suffice. We are not compelled, e.g., to divide the various ways in which we think about people into two rival camps, pitting one against the other, trusting that the survival of the fittest will ensure that the "proper" view will swallow the other. "A human being is not a loosely joined combination of two radically different elements, but a single item—a whole person" (Midgley, 2000, p. 84). Rather than seen as competitors, "these various ways of thinking are like a set of complementary tools on a workbench or a set of remedies to be used for different diseases. *Their variety is the variety of our needs*" (emphasis in original).

I also want to use two other metaphors due to Mary Midgley: multiple maps of the same territory and the many windows affording views of an aquarium. David Midgley (2005) points to a central theme in Mary Midgley's (his mother's) work, namely, there are different ways of seeing the world, which do not necessarily conflict with one another. He discusses and illustrates both the "many maps" (p. 14, p. 331) and "one aquarium, many windows" (p. 356) metaphors.

Mary Midgley (2004) employs the "many maps" metaphor, which was discussed in detail in *Science and Poetry*, 2001, to make the point that we need *scientific pluralism*—"the recognition that there are many independent forms and sources of knowledge—rather than reductivism, the conviction that one fundamental form underlies them all and settles everything" (p. 39). She considers the many maps of the world that are found in the first pages of atlases: "We do not make the mistake of thinking that these maps conflict. We know that the political world is not a different world than the climatological one, that it is the same world seen from a different angle. Different questions are asked, so naturally there are different answers" (p. 39).

The "one aquarium, many windows" metaphor is also useful in this regard. Consider a large aquarium with a number of windows allowing the simultaneous viewing of parts of that aquarium by multiple viewers. The view from any one window does not allow complete understanding of the contents of the entire aquarium: "We cannot have a single comprehensive view of the whole aquarium—a single, all-purpose, philosophic Theory of Everything ... The world is simply too rich for such reductive strait-jacketing" (Midgley, 2001a, p. 19). But this does not say we are unable to improve upon our restricted view—all we need do is recognize our limitations and admit the possibility that others may be able to help us learn. Midgley continues, "This does not mean no understanding is possible. We can

relate these various aspects rationally because they all occur within the framework of our lives. We can walk round and look at other windows and can discuss them with each other. But we cannot eliminate any of them. We have to combine a number of different ways of thinking—the views through several windows, historical, biological, mathematical, everyday and the rest—and somehow to fit them together”.

These metaphors (Note 5) are useful to Midgley since she takes a holistic, one-world’s approach to looking at things: There is but one world; what we have are many ways of looking at that world. Each of these ways may be useful for answering a specific sort of question. No way is “the correct way”. And, while she recognizes but one world, she emphasizes that it is a big one (Midgley, 1996), and that its complexity requires that we take in the information about it that are provided by alternative views and integrate their contributions into a unified whole.

I take it that the fact that the world is complex needs no documentation. My attitude is exemplified by Sapolsky (2017, p. 305) who, when considering just the religious aspect, flatly states: [T]hree obvious points:

- (a) a religion reflects the values of the culture that invented or adopted it. And very effectively transmits those values;
- (b) religion fosters the best and the worst of our behaviors;
- (c) it’s complicated.

In sum, we live in but one, complicated world and understanding is best reached by integrating the views from the many windows that capture whatever understanding is possible from their respective, restricted views. A given map will be useful for a given purpose, but maps of a given territory are still maps of that territory. A given map may be better for a given purpose, but we may need them all to capture all aspects of that territory’s structural nuances. No one map is “most fundamental” and able to be used in lieu of all the others.

6. Summary and Conclusions

I (Kowalski & Mrdjenovich, 2013, p. 19) previously quoted David Sackett and Jack Wennberg who considered how to choose the best design for a clinical investigation:

The question being asked determines the appropriate research architecture, strategy, and tactics to be used—not tradition, authority, experts, paradigms, or schools of thought ... Health and health care would be better served if investigators redirected the energy they currently expend bashing the research approaches they don’t use into increasing the validity, power, and productivity of the ones they do (Sackett & Wennberg, 1997, p. 1636).

I also used the “horses for courses” terminology as in Petticrew and Roberts (2003) to signal the desirability of choosing the proper tool for the job at hand (Kowalski & Mrdjenovich, 2018). I suggest here that the nature of the question posed can provide valuable information about how to weigh the views obtained from various (e.g., scientific and religious) windows. Goodman (2008, p. 132) has

pointed out that while the motives of science and religion intersect at both seeking understanding, “the difference in focus between science and religion lies partly in the fact that our natural sciences seek causal understanding about the world we see and touch and the things in it that we can gauge and measure, and tease out from one another, not just conceptually but experientially, things that we can reliably relate to one another—ideally, by type, and mathematically. Often the focus is on things we can control ... the religious quest probes beyond measurement, quantity, or control” (p. 132).

That there will be some people who, at least some of the time, will want to pursue the religious quest, I cite but two examples. The first recognizes a role for *imagination* in knowledge. Mary Midgley (2001b, 2003) demolished the supposed dichotomy between Imagination and Reason, arguing that philosophy needs both if it is to be both sensitive and rigorous; to be able to appreciate a vista as well as analyze the structure of a leaf. As summarized by David Midgley (2005, p. 16):

“Imagination ... is not to be seen as an optional extra in our mental equipment, providing spare-time entertainment for the mind in the form of poetry, paintings and religious visions, but as an essential element in all our knowledge of the world, not excepting the most rigorous scientific theories”.

The second example is based on an observation by Goodheart (2008, p. 126): “The religious ‘attempt to explain’ when not performed in a dogmatic style may be necessary and valuable for a large portion, perhaps even a majority, of humanity who seek not objective truth in the answers, but consolation”.

There will be another side to this question, viz., Dawkins (2006) devotes a section of his book (394ff) to developing a secular response to *how do we deal with consolation if there is no God to provide it?* And his answer may be useful to someone who in fact is godless, but for the billions of people who subscribe to a God, Dawkins’ insights will be *summa cum Not Applicable*.

In the spirit of abashment avoidance, I suggest that the New Atheists should concentrate on developing a secular humanism, while those with a religious bent might do well to focus on strategies seeking a consilience with science, e.g., via process philosophy (Note 6). Space limitations preclude a detailed sketch as to how this might proceed (and process philosophy is but one of the possibilities) but I will note we have already seen part of this development in Barbour (1997, p. 2000). In his four-tier taxonomy, under Integration, Barbour aims to unify and harmonize science and religion via process philosophy. As pointed out by Smedes (2008), Barbour’s view is based on his notion of *critical realism* (Barbour, 1997, p. 89; Barbour, 2000, p. 22):

“I advocate a critical realism holding that both communities make cognitive claims about realities beyond the human world. We cannot remain content with a plurality of unrelated languages if they are languages about the same world. If we seek a coherent interpretation of all experience, we cannot avoid the search for a unified world view”.

Here again, we see a call for dialogue, using a common language based on a unified world view. I suggest that one view worthy of serious discussion is Worrall who seeks his “unified world view” in *evidence*. From Worrall (2004, p. 60): “There is only one reality; that reality either does or does not

contain a god, an afterlife or whatever, just as it either does or does not contain quarks or superstrings or whatever; and the question that needs to be addressed about both sets of unobservable (alleged) entities is what evidence we have for their existence”.

I advocate for a reasonably long cease-fire period during which those interested in S&R develop their world views in a scholarly, objective fashion, without basing their development exclusively on what is wrong with other developments. They can and should then get together and discuss (not debate) their findings. If done dialectically, convergence to truth seems possible.

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Notes

Note 1. Dennett (2007, p. 98) quotes Marcel Gauchet: "As far as we know, religion has without exception existed at all times and in all places". While this is an obvious overstatement in that there were times before there was anyone to even think of such things, it does emphasize the advanced age of the associated ideas.

Note 2. A phrase that appears *often* in the S&R literature is "if properly understood". This should be seen as a red flag, an indication that rather than presenting an argument, the writer is about to guide your thinking along lines leading to his/her favored conclusion.

Note 3. Perhaps the best example of this is the so-called "God of the Gaps" which posits that God be invoked to explain those things that science cannot, e.g., explain gaps in the fossil record theologically. Religious thinkers have resisted being pigeon-holed in this way recognizing that with the (inevitable) progress of science, that leftover for religion would diminish. Dawkins (2006, pp. 151-154) considers this topic from the New Atheist's point-of-view. He also points out that the whole notion of "irreducible complexity" which was developed by the creationist Michael Behe (1966) represents classical "God of

the Gaps reasoning”. Eldredge and Gould’s (1972) *punctuated equilibrium* is an oft-cited scientific retort to explaining gaps in the fossil record.

Note 4. The phrase “more heat than light” can be traced to Polonius in Shakespeare’s Hamlet. It has since been adopted by the legal profession to describe arguments containing more passion than persuasiveness. See, e.g., www.abi.org/abi-journa/shakespeare-for-lawyers-more-heat-than-light. It has even been used to describe some uses of multivariate statistical analyses in anthropometric research (Kowalski, 1972) and the relationship between Economics and Physics (Mirowski, 1991).

Note 5. Dawkins’ (2006, p. 405) “The mother of all burkas” is another metaphor that proves useful in this context. To be sure, Dawkins was making a different point, but the idea of the burka, where one views the world through a narrow slit in the veil, would lend itself well to integrating complementary views via discussion.

Note 6. The Wikipedia on-line encyclopedia provides the following overview:

Process philosophy is a longstanding philosophical tradition that emphasizes becoming and changing over static being. Though present in many historical and cultural periods, the term “process philosophy” is primarily associated with the work of the philosophers Alfred North Whitehead (1861-1947) and Charles Hartshorne (1897-2000). Process philosophy is characterized by an attempt to reconcile the diverse intuitions found in human experience (such as religious, scientific, and aesthetic) into a coherent holistic scheme. Process philosophy seeks a return to a neo-classical realism that avoids subjectivism. This reconciliation of the intuitions of objectivity and subjectivity, with a concern for scientific findings, produces the explicitly metaphysical speculation that the world, at its most fundamental level, is made up of momentary events of experience rather than enduring material substances. Process philosophy speculates that these momentary events, called “actual occasions” or “actual entities” are essentially self-determining, experiential, and internally related to each other.