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A light unto our path: Toward a mutual understanding of fundamentalist Christianity and science

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A LIGHT UNTO OUR PATH: TOWARD A MUTUAL UNDERSTANDING OF FUNDAMENTALIST CHRISTIANITY AND SCIENCE

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Abstract

My research into the Christian fundamentalist and scientific worldviews shows that existing hostility between the two can be attributed to extremists on either side. Such polarization can be a hindrance to all involved by inhibiting scientific learning and disregarding valid methods to signify and understand one's place in the world. I explore each worldview and its validity as well as provide examples of how each can be harmful when taken to the extreme. I then outline philosophies by Stephen Jay Gould, Michael Ruse, Marcus Borg, Karl Popper and others who deny extremism and will allow an individual to find middle ground between these perspectives. The avoidance of polarization will decrease the barriers so apparent today.

A Light unto Our Path: Toward a Mutual Understanding of Fundamentalist Christianity and Science

When I first came to the University of Northern Iowa, I chose to study biology because it was the means to an end rather than a field I had been intrigued by in high school. I knew that I wanted to go into the medical field and had been fascinated by human health; a biology major seemed the best way get there with all the requirements for medical school built into the degree. In short, I had no idea what I had signed up to do. I never realized how much my worldview would change from my previous life as a college freshman.

I came here from a strong community that strived to enable the fulfillment of my potential. This meant encouraging me in and out of the classroom as well as providing guidance to ensure I would become a principled citizen. Many of those I admired outside my family in high school and early college based those principles on their Christian religion and helped me learn what they believed was the best way to manage life. Somehow, this one approach did not provide the tools I needed to make sense of reality. Over the years, media exposure to the clashes between conservative Christian ideas and evolutionary science led me to feel anxiety over choosing sides. Like many, I believed there could only be one source of knowledge from which to form my worldview. Gradually, my plans directed me toward Physician Assistant School and lead me to choose a more flexible version of UNI's biology major than the one I had started.

This new major required an Ecology and Evolutionary Theory course, some weeks of which were emotionally draining not only because I had previously known very little about evolution, but also due to one of the textbook author's tendency to disregard any other form of knowledge. Evolution advocate and anti-religion atheist Richard Dawkins made underlying jabs at religious persons whom he portrayed as foolish or immature in their understanding of the

world. Furthermore, much of what I had seen and experienced until that class taught me that religion and science were at odds.

As class continued, I learned more about evolutionary theory, and most importantly, about myself. I began to grasp that science and religion were actually two ways to make sense of reality and did not have to engage in full-scale confrontation to the detriment of my education. I could operate within the scientific perspective and view the rest of my academics with an analytical eye while garnering significance through the values of my faith. Objectivity could be useful applied to science as well as religion and did not have to be a hindrance to my individual convictions. In fact, it became vital as I struck out on a search for a middle way by separating my thoughts from others' and beginning to clarify my personal beliefs- an ongoing process. Yet I found that the hostility which originally caused my internal strife did not have to be a part of this process. The more I understood the extremes, the more I realized I did not agree with either side. Consequently, the less concerned I felt about hostility stemming from the religion-science issue as I found both extremes to be detrimental and lacking. I thus propose that much of the hostility crippling the scholarship of students such as myself can be attributed to extremists on both sides of the religion-science issue.

To that end, I will first address the differing foundations of fundamentalist Christian and scientific worldviews whose extremes consist of absolutes that deny other forms of knowledge and can lead to hostility. Next, I will propose some moderate perspectives which may be adopted in order to decrease polarization that prevents students like myself from utilizing a more full understanding of reality. I am not attempting to persuade either side to accept the other's viewpoint, nor am I able to cover all the material I would like due to the nature of an undergraduate thesis.

In the time following my Ecology and Evolutionary Theory course, I have taken on extensive reading, discussion, and learning in the academic field of religion as well as science. My paper is based on a literary review of expert sources from both fields as well as authors who advocate a middle way. To narrow down the scope of approaches, I have selected one source to represent each extreme worldview of fundamentalist Christianity and extreme scientific empiricism.

To characterize empiricism at its extreme, I have selected evolutionary biologist and popular author Richard Dawkins' book *The God Delusion*, which aims to convert religious persons into atheists on the basis of evolutionary biology. To characterize fundamentalist Christianity, I have chosen a text entitled *Inerrancy* and edited by Norman Geisler. This text features contributions from scholars with doctoral degrees from Harvard, Princeton, the University of Chicago, and Oxford whose aim is to corroborate fundamentalists' principle of inerrancy and explain why unwavering confidence in veracity of the biblical scriptures is necessary for guidance of those in the faith.

My source to bridge the two is written by philosopher of biology Thomas J. Schoenbaum and entitled, *Keeping the Faith: Religious Belief in an Age of Science.* Throughout this paper I will refer to numerous texts by proponents and critics of each worldview and will conclude by describing sources which aim to provide a non-extremist philosophy that readers may find helpful to mitigate society's current polarization. My goal is to work toward enabling a fuller understanding between the two perspectives, to de-mystify them while maintaining that we can accept the marvels of modern science *and*, to some extent, ancient religious ideas. The benefits of this could mean fewer barriers to teaching evolution and less alienation of fundamentalist churches from the mainstream population. A Pew Research Center Poll (2005) shows that over

40% of Americans believe “living things have existed in their present form since the beginning of time” (p. 2). This is an avoidable problem that contributes to a public misunderstanding and mistrust of science that may impede our nation’s ability to produce the scientists and researchers of both the present and future. Lack of teaching evolution is just one example of an issue that has hindered our students and improperly divided our nation based on extremist worldviews.

Open discussions such as this take utmost relevance in today’s culture as a method to bridge the gap between two ways of seeing and understanding the world, a step towards tackling difficult issues while welcoming different viewpoints to stimulate and advance ideas. While certain extremists of both sides would rather not seek to lessen hostility, dialogue would be more productive if they would do so. Simply gaining a fuller understanding of each point of view, especially if one does not subscribe completely to either, can help diminish rash exchanges based on little information. Understanding can build a greater tolerance and respect while greater insight between these worldviews would allow each side to consider the other's viewpoint and realize the reasoning behind their thought process. This may not make the other's actions acceptable or lead to agreement, but understanding their reasoning or lack thereof can enhance communication and permit questions where a complete refusal to dialogue currently exists. Without understanding between the worldviews of science and religion, we will remain a nation doomed to skirt the topic of evolution in school classrooms and continue to disregard other ways to relate to the world. Dialogue is imperative to move away from extremist worldviews that polarize and inhibit us. Only then will substantial progress to reducing hostility-- and the barriers it creates-- occur.

Differing Worldviews

Society has been presented with two seemingly polar worldviews given the advances in scientific thinking since the Enlightenment. What constitutes these worldviews, and must they exist so opposed? First, I will describe the worldview, validity, and extremism of science. Next, I will address the worldview of fundamentalist Christianity in particular and discuss the value of religion in general before addressing fundamentalist extremism.

This paper will presume that valid sources of knowledge exist beyond science. Namely, that the scientific worldview is a human construction operating within a framework that prevents it from addressing certain aspects of human existence. Science and other worldview constructions are considered valid in that they allow correct conclusions to be made about reality and our lives (Schoenbaum 2008). There are some who do not accept this assumption. If so, then there remains little solution for the hostility exhibited between science and extreme religion. The worldview of religion as well as alternative methods to extremist science and extremist religion will be discussed later in this and the 'Prescriptions' section.

The Scientific Worldview

The scientific worldview refers to both the knowledge described by science as well as the procedures used to obtain that knowledge (Schoenbaum 2008). Today, science presents an empirically-based concept of reality that is verifiable and based upon repeatable experiments and observations. Within this perspective, one believes the world is rational, run by natural laws, and relies on the importance of observation, hypothesis, inductive, and deductive reasoning. Beginning with the description of the scientific method by Roger Bacon, science became centered on the experimental testing of hypotheses. As the scientific method became more widely used, science gained a particular utility which enables it "to reduce our suffering and

enhance our well-being" (as cited in Schoenbaum, 2008, p. 27). However, this approach has its limits. Bacon's then-radical idea meant that science is restricted to studying the natural world, without taking that which we cannot observe and test into consideration (Schoenbaum 2008). At that time, science took on an approach consistent with practical matters of day-to-day living and was no longer untouchable for the average citizen. This perspective touts the empirically-based only and must disregard other ways of describing the world simply because they cannot be tested.

The theory of evolution is central to the scientific worldview. Religious fundamentalists deny it, while scientists echo evolutionary biologist Theodosius Dobzhansky's (1973) words: "Nothing in biology makes sense except in the light of evolution" (Dobzhansky, 1973, p. 125). There are three main points to understanding evolution. First, small variations arise randomly throughout time within populations. Second, variations are inherited and passed down. Third, populations can grow more quickly than their food supply, which creates intrapopulational competition. This competition, directly or indirectly, drives the process of natural selection, whereby an individual's reproductive fitness is influenced by how well it adapts to its environment. Traits of an individual-- whether inherited or created by genetic mutation-- are successful when organisms with those traits survive more to reproduce more often and pass on those successful traits to subsequent generations.

Science as a field derives its authority from the aforementioned methods by which knowledge is sought. Knowledge in and of itself is inherently valuable to society. However, the field is also vital for the ways in which that knowledge is made useful. Without science and scientific practices, such innovations as antibiotics and electricity would not exist. We would be

deprived of an extraordinary amount of information that enables not only our lifestyles, but our very lives.

Although much of the biological world can be explained, the universe and human activities within it might not have meaning if one understands the world solely through the scientific approach. Such a conclusion may or may not be troublesome internally to scientists, but is accepted as inevitable. Science aims to achieve closer and closer approximations of reality; while these approximations can fall admittedly short, they are the most consistent with what this worldview sees as complete reality. Meaning is seen as a wholly a human construction and cannot be corroborated via scientific means because the concept is not testable.

When examined more closely, science is not merely empirical but also requires certain assumptions. One central assumption is that the world is rational and can be explained according to human means. As stated by German theologian and Bible critic Rudolf Bultmann, scientific thinking "presupposes both the unity of the world and the lawfully regulated order of things and occurrences in the world" (as cited in Bierlein, 1994, p 255). Another assumption of science can be demonstrated by the field's acceptance of provisional knowledge. Researchers agree on certain principles that have not yet been proven false in order to allow advancement, what may seem ephemeral to those unfamiliar with scientific principles and limitations. Theoretical physics abounds with models and theories based on miniscule particles that we cannot actually see but whose effects may explain some of the oddities unaccounted for via conventional methods of experimentation. Ideas such as these must be trusted and even taken with a measure of faith to allow the functioning of research. These concepts make as much sense as possible at the current moment and with current data. To a scientist, incomplete information is accepted because it supports a better approximation of reality.

Consider the idea of relative motion to demonstrate further assumptions. Thanks to Copernicus, we know that the Earth is in motion and rotates around the sun. Yet, our measurements often occur under the assumption of our central frame of reference on Earth when indeed no such reality exists. Our concept of days and years may not have an absolute reference. Indeed, our frames of reference on can be considered arbitrary in that they are based here (on Earth, in our nation, etc) rather than somewhere else. The effects of time would not change if we subdivide it differently, but our perception of it might. All frames of reference can be considered arbitrary in this aspect, but we continue to utilize them because they are useful; we operate under a common supposition to gain a consistency that researchers generally agree upon (Schoenbaum 2008).

Misconceptions arise when fundamentalists (or the general population) do not realize that science acknowledges its reliance upon data that is subject to change. They mistakenly assume the dynamic nature of science means that it cannot be trusted as a body of knowledge, when in actuality science depends upon the most accurate and critically accepted, testable ideas.

The scientific worldview contains rigid standards for knowledge and these standards often can lead to a dismissal of all other methods of knowing. This is especially true of hardlined opponents such as evolutionary biologist and author Richard Dawkins. Dawkins (2006) not only dismissed the validity (and therefore worth) of *all* religious beliefs, but criticized them for the injustices they have incurred against humankind. He equated a religious education to child abuse (p. 354) and boldly declared religious belief equivalent to a harmful fallacy in *The God Delusion* (2006). Dawkins portrayed religion as "wishful thinking" (Dawkins, 2006, p. 190), and asked, "Could it be that God clutters up a gap that we'd be better off filling with something else (Dawkins 2006, p. 347)?" Dripping with animosity toward religion, his self-admitted goal to

abolish all religion creeps into his academic ideas when he writes or speaks about evolutionary concepts. Dawkins' attitude leads to the general perception that all who operate under the scientific worldview harbor the same desire; obviously creating a reaction and backlash aimed at the individual man as well as the worldview of science he represents. The resultant polarization provides an opportunity for both scientific and fundamentalist extremists to convince those in the middle who react against one extremist viewpoint to move closer toward the other extremist perspective. Therefore, the individual is magnetized; repulsed by one side, he or she is magnetized toward the other.

Yet, Dawkins undermines his chances of convincing persons with whom he disagrees to adopt a more liberal mindframe when he attacks religion, then turns around and ironically proselytizes in much the same manner as a fundamentalist (Linker 2007). He offers such mocking comments as "Maybe if you repeat something often enough, you will succeed in convincing yourself of its truth" (Dawkins, 2006, p. 352). These comments are part of Dawkins' effort to undermine religious persons' foundation and guilt them into "converting" to a more liberal mindframe, namely, atheism based on evolutionary biology. Damon Linker, a senior fellow at Pennsylvania's Center for Critical Writing and author of *The Theocons,* offers a more harmonious approach to liberalism. He defined liberalism as "a philosophy of government, not a philosophy of man" (Linker, 2007, p. 18). This philosophy stems from the classic form which advocates an acceptance of intellectual variety as well as the social issues that come with it. Linker (2007) related the definition to our current topic by explaining liberalism is:

> to accept…although I may settle the question of God…it is highly unlikely that all of my fellow citizens will settle it in the same way—that differences in life experience, social class, intelligence, and the capacity for introspection will invariably prevent a free

> community from reaching unanimity about the fundamental mysteries of human existence, including God. (p. 18)

Extremist science such as that trumpeted by Dawkins encourages an opposite form of liberalism to take religion's place. He seems to seek a society in which religion is completely abandoned, an *illiberal* goal and detrimental to our society (Linker 2007). If extremist ideology is taken up on either side by great numbers of persons, we will see increasingly resistant reactions and find ourselves in the middle of destructive, close-minded arguing that threatens to further hamper students of science and religious organizations alike.

When the scientific worldview is carried to an extreme, it consists of complete materialism and denies any possibility of knowledge beyond that which can be observed. Denial implies disrespect and induces a religious fundamentalist reaction to the entire worldview rather than enabling dialogue to understand differences and mitigate misconceptions. Atheistic materialists such as Dawkins see irreconcilable conflict between religion and science; as a consequence, they harbor no regard for the validity of any religious beliefs and actually provoke the conflict they view as unavoidable; the conflict which causes a backlash amongst religious persons who are stricken by tactless claims and close themselves off from any measure of dialogue in retaliation. The reverse is true with fundamentalists who denigrate scientists; scientists react to the vocal minority of Christianity and then close themselves off from further dialogue.

We again see the need to observe separate realms of truth; Dawkins is relying on the methods of science in an attempt to prove a non-scientific proposition. It is inappropriate to apply the evidence standards of truth to religion when they are conceptually distinct and have been validated throughout history as a field of human knowledge (Schoenbaum 2008). The same

can be said for religion's claims about the natural world, an errant substitution of one type of truth for another.

We have seen that scientific claims depend on the ability to be verified and not falsified by others' research. Yet, Schoenbaum (2008) has pointed out that such strict criteria for truth "mean that the scientific method excludes from investigation all propositions that are not amenable to measurement" (p. 65). So where do non-measurable propositions fall? What is the meaning of a proposition that is not testable or able to be shown false? (Schoenbaum 2008) Philosophical materialists say this sort of proposition would be meaningless, but Schoenbaum (2008) countered "this is a logical contradiction: the proposition that no scientifically non-testable hypothesis has any meaning is itself not objectively verifiable so it is also a meaningless statement from this point of view" (p. 65). When scientists speak of religion as void of meaning, they intend to convey that it is not a reality. The point of science is not to create meaning or personal significance. Assignments of "meaning" or "meaningless" to non-verifiable propositions by the scientific worldview therefore are quite rare. While one can use scientific data as the sole basis for the meaning found in the world, he or she may be hard-pressed to do so without employing realms of thought beyond science. It is to these realms we now turn.

Differing Worldviews

Fundamentalist Christianity and Religion

Fundamentalism is largely a modern phenomenon fueled by American Christian conservatism. This movement gained speed in the last century, although it originated in the Reformation largely as a reaction to increased empiricism. In this sense, a fundamentalist is a Christian who believes the inerrancy and sufficiency of the Christian Bible as well as its ability to provide salvation through the divine Jesus. The fundamentalist considers himself or herself to

be “in the world, but not of the world” (a phrase derived from John 17:16), existing in the earthly life but rooted in the meaning and purpose of a spiritual dimension. The phrase can be used to explain the differences between believers and non-believers, a distinction often-evident to a fundamentalist. Fundamentalist Christianity is an absolute religion that allows very little room for sources independent of religion to garner importance in its followers’ lives.

The New Columbia Encyclopedia has clarified the formation of the fundamentalist view with this statement:

> The traditional Christian view of the Bible is that it was all written under the guidance of God and that it is, therefore, all true, literally or under the veil of allegory. In recent times, however, the view of many Protestants has been influenced by the pronouncements of critics. This has produced a counter-reaction in the form of fundamentalism, whose chief emphasis has been in the inerrancy of the Bible. (as cited within Geisler, 1980, p 386)

Clearly, a firm support for the inerrancy of Christian scripture is the most obvious characteristic of fundamentalism. We shall consider the opinions of the *Inerrancy* authors normative for the fundamentalist, meaning the authors’ statements imply how scripture ought to be seen. According to *Inerrancy*, fundamentalists’ value of Scripture relies entirely upon complete veracity, rather than the value found in moral meaning and guidance of the text. Gleason Archer (1980) has explained:

> God’s written revelation came in inerrant form, free from discrepancies or contradictions, and this inerrancy contributes to its achieving its saving purpose. If there were genuine mistake of any sort in the original manuscripts, it would mean, obviously, that the Bible contains error along with truth. As such it would become subject to human judgment, just

> like any other religious document. The validity of such judgment, of course, depends upon the judge's own knowledge and wisdom. If he rejects the truth of the scriptural record simply because it seems to him to be unlikely or improbable, then he is in danger of eternal loss. The charge of scriptural self-contradiction or factual error is to be taken quite seriously; it cannot be brushed off as a matter of minor consequence. At stake is the credibility and reliability of the Bible as authentic revelation from God. (p. 59)

In line with fundamentalist thinking, when the Christian Scripture is denied total authority, individual reasoning takes its place. Fundamentalists see this as a problematic matter of hubris; if each person is free to make his or her own judgments or misjudgments, there is no authority or trust given to God. Such criticism is especially offending when one believes the Scripture is the inspired words of God. This group views the choice as one between human understanding and divine authority. When such a stark contrast is painted, most fundamentalists choose to accept the reliability of scripture. They see alleged errors as posing minor theological significance; those that threaten their principle of inerrancy are reasonably clarified elsewhere in the Bible. Fundamentalists such as J. Barton Payne thus reason that discrepancies uncovered through the scientific analysis of textual criticism-- the process of uncovering the text's original words (Ehrman 2005) -- must not take the fullness of a transcendent Scriptural character into account and are either limited or disqualified from consideration (Payne, as cited in Geisler 1980). However, the stark contract also lends to an unnecessary polarization between ways to make sense of the world by denying any other worldview's relevance. Such polarization has been the source of verbal attacks by fundamentalists against non-religious scientists, whom they believe are rejecting everything fundamentalists believe in by not accepting the Bible to be literally true.

To a fundamentalist, biblical writings have the final authority over human knowledge, even when those biblical writings are questioned by scholars. Fundamentalists' assumptions reflect a basis in that which is beyond human authority because Scripture is "the way of a so-called gospel that reflects a reality in which the realm of nature does not have the final word" (Geisler, 1980, p. 444). One account put the issue of suppositions and textual criticism's credibility to fundamentalists this way:

> They [scientists] interpret the Bible from within the presuppositions of the contemporary scientific world view. Such a world view assumes that all historical events are capable of being explained by other known historical events. In other words, what we call the supernatural is not the immediate activity of the living God; for it belongs to the area of legend and myth and not to the area of historical reality. (Payne, as cited in Geisler, 1980, p 90)

Therefore, the text must be taken at its face value, with the reader committed to scriptural reliability (Geisler 1980).

Why do fundamentalists and religious persons in general assume a reality that is unverifiable? Extreme materialists vehemently deny any such reality, and immediately discredit any sources of knowledge which stem from a non-empirically based tradition. For our purposes, religious belief is the attempt to attain the transcendental and add meaning to life. The religious worldview depends on singular ideas of truth that are not verifiable by scientific methods. Often, religion relies upon myth and mythological symbols to provide a depth of meaning found only in the highest sense of the word. Used this way, myth does not equal fiction, but justifies why we are here and provides both purpose and an exemplary model according to which we should live (Bierlein 1994). Classical scholar J. F. Bierlein (1994) asserted this view when he wrote,

"Scriptures of great religions are all packages of myth that transcend time, place, and culture" (p. 5). Humanity relates to the past, deals with the present, and ponders the future through myth—often in the form of religion.

Religious ritual, culture, codes, and wisdom continue to remain an important factor in our society, even if persons claim no system of belief. Ritual binds the community together in a way modern political ideology cannot (Schoenbaum 2008). A noticeable portion of the civil ritual we observe around holidays has roots in religion. While ritual derived from religion is not the only thing that unites communities, we must acknowledge its active role. Religion is also a carrier of culture, preserving identities and enabling valuable understanding of one's heritage. In Christianity, this heritage should serve as a reminder of empathy and unity with the rest of humanity, rather than the distinctive separation we see with fundamentalists. Myth and religion also serve as the basis for much of our current moral code in the United States and continue to influence human behavior through such proverbs as the "Golden Rule" and commonly known religious principles such as the Ten Commandments.

We can see that science and religion may not be so far apart on the spectrum of knowledge. Religious scholars such as Susan Hill characterize the Big Bang as a modern-day creation myth. These scholars point out the crafted symbols, language, and story used to describe the creation of the universe, which is currently beyond our full comprehension. These elements are central to the structure of myth. For example, Cecie Starr and Ralph Taggart's textbook *Biology: The Unity and Diversity of Life* uses analogies and similes in story form to re-create the Big Bang for students (1998). An excerpt is below:

> Think about how you rewind a videotape on a VCR, then imagine "rewinding" the universe. As you do this, the galaxies start moving back together. After 12 to 15 billion

> years of rewinding, all galaxies, all matter, and all of space are compressed into a hot, dense volume about the size of the sun. You have arrived at time zero. (p. 332)

Simply explaining that the creation of the entire universe was accomplished in an instant is beyond most people's comprehension. Is the videotape analogy supposed to be perfect? No. However, I would argue that the inclusion of a colossal number such as "12-15 billion years" also fails to relay a complete understanding of the time in issue. Figurative language is used to relay meaning and allow the audience to grasp a basic understanding of the scientific concept. Despite the specific definitions restricting scientific truth, scholars argue the symbolic language used to explain the Big Bang allows us to relate to an event that birthed everything we experience and much we do not fully comprehend through the type of communication most widely used by religion (Hill 2009).

The ways in which people communicate about a concept give us a glimpse into the power and value of mythical thinking. If we say, "The Big Bang occurred as an explosive formation which created all the matter in the universe," persons (including scientists) will use language and symbolism to construct ideas about what that means, telling science as a story in order to relate to it. The power of the information lies in the meaning one can glean from it. We might learn more about how something works, but until we imagine how that might apply to our human lives and how that information can be made practically applicable to the ordinary individual, the finding may not carry much weight.

While meaning may be found for non-adherents apart from religion, they nonetheless engage in mythological thinking to form stories, engaging in communication that is relatable through analogies to explain ideas which at first may seem incomprehensible. So in reality, while Dawkins claims to operate in a completely scientific manner, he is at the same time using a

religiously-oriented version of atheism to proselytize his ideology. The hard-line atheists speak of their worldview with the conviction of a religious person, and engage in mythological discourse while they attempt to convince audiences that the atheist worldview is superior and above all others. Even critics of religion utilize tools of religion to make sense of the world.

Mythological discourse allows us to think about and relate to that which we cannot test; to engage in ways of communicating meaning and value which belong to another kind of truth. The truth found in religion is one that does not need a historical or empirical basis, but is nonetheless real to those who practice it. The Protestant theologian Reinhold Neibuhr wrote: "A vision of the whole is possible only if it is assumed that human history has meaning; and modern empiricism is afraid of that assumption. Meaning can be attributed to history only by a mythology." (as cited within Bierlein, 1994, p. 264) Religion's eternal ideals seem more ideologically stable to some than a field like science where proof changes yearly.

Both myths and evolutionary theory help bring us to a place where we can stand in awe of the unity present in the diversity of life. Scientific information gains popularity with the public when one can marvel at it. The imagery painted by figurative language such as that found in the Starr and Taggart textbook (1998) has proven useful for scientific explanation; this book actually refers to several biblical stories as a segway into evolutionary theory. Perhaps the methods in which religion provides meaning and significance to life serve to assist science in valuable ways and demonstrate that these perspectives need not be considered mutually exclusive.

Most importantly, religion serves as a method of finding meaning, value, and consolation in life, often through myth-centered means of communication. The importance of securing meaning in one's life can be underestimated by science, which tends to focus on secular ethical codes. But, if a person did not find meaning in life through purely secular methods, would he or

she be able to be a productive member of society? Would they survive to reproduce and successfully raise offspring? While the scientific perspective is concerned with these questions, the answers may not sufficiently result from secular methods alone.

Religion can be valuable to society to provide meaning, but adherents must be aware of extremism that also occurs within fundamentalist Christianity. Fundamentalists reject anything that conflicts with their theology due to the high value placed upon scriptural veracity and explanatory nature. Many problems arise when the religious concept of truth is used in place of the scientific. In addition, fundamentalists' intolerance of criticism allows the reactionary thinking that birthed this movement to blanket followers with hostility toward not only science, but reason itself (Schoenbaum 2008). Consequently, anything not in accordance with fundamentalist thinking is felt as a menacing threat within this worldview and polarizes members toward even more absolutist views.

The "Chick Tracts" created by Jack Chick provide evidence of an extreme fundamentalist position that rejects any issue in conflict with accepted doctrine. Chick encourages his audience to proselytize these opinions and refuse any other ideas of knowledge from external sources-- a quick route to unnecessary polarization. According to Chick Publications' website (2009), hundreds of millions of cartoon tracts have been published in nearly one hundred languages, and copies were even requested by the Smithsonian to represent one aspect of American religious culture (Chick Publications, 2009, para. 14). Chick Publications' website "FAQs" (2009) lay out a clear example of his type of extremist thought:

> God has only one Truth. If something is not the Truth, it is false, and must be revealed as such. …. We love people of all religions. In fact, we love them enough to want to show them the joy of knowing the True Creator. We are unwilling to lie to them and say that all

> gods are real, when we know this is not true. We are not being intolerant, but compassionate, desiring to help them find both joy in this life, and eternal life beyond. To do anything else would be dishonest. (Question 8)

Chick and those who purchase his cartoon tracts that preach against conflicting ideas (including evolution) merely add to the public's perception of fundamentalists as out-of-touch, misinformed individuals who refuse to acknowledge scientific ideas. Ironically, just as evolution extremists like Dawkins mistake one type of truth (scientific) to be the only kind, so do the religious persons who assume natural selection necessitates atheism. They too fail to consider other sources of knowledge (Schoenbaum 2008).

Ben Stein's recent film *Expelled* demonstrates another example of religious rhetoric that instigated controversy where none should have existed. The film purports to challenge the hold of so-called "Big Science" and question the legitimacy of evolution. Its website also claims the government suppresses knowledge of Intelligent Design, which in the filmmakers' views should be considered alongside evolution (Premise Media, 2008, para. 1-2). Intelligent Design is an idea based on pseudo-scientific and philosophical arguments that either undermine evolutionary theories or are claimed to act in accordance with them and consequently uphold the necessity of a Designer.

The National Center for Science Education (2009) exposes *Expelled's* faulty logic associated with Intelligent Design and critically reviews Stein's condemnation of Big Science. While the scientific institution is quite firm in what it does and does not accept as credible, Stein does feature fictionalized accounts to portray science as evil.

To provide an example of Stein's reliance on faulty information, we shall consider the case of Richard Sternberg, former editor of *Proceedings of the Biological Society of Washington*.

The film gives a sympathetic nod to the man whose "life was nearly ruined" (*Expelled* 2008) after publishing a pro-Intelligent Design paper authored by Stephen C. Meyer. In reality, Sternberg was a voluntary editor who had already submitted his resignation six months prior to the article's publication. He kept his paid job at the National Institutes of Health after the publication as well as his unpaid Research Associate position with the Smithsonian. Moreover, Sternberg did not even suffer the disciplinary action merited after he bypassed the magazine's review board protocol, reviewing and submitting the article himself- probably in recognition of the article's "shoddy science" (Catsoulis 2008).

The *New York Times* provided a less biased review than the website (as the newspaper sometimes employs Stein as a freelance columnist) but still rebuked *Expelled* as "an unprincipled propaganda piece that insults nonbelievers and believers alike" (New York Times, 2008). Why do films like this attract a following? They summon conflict and gain a following by misinforming viewers. This is not the type of media or society we should foster. *Expelled* created huge controversy by portraying evolution as evil and fueled misinformed individuals with invalid arguments against evolution in schools. Persons of all faiths should critically examine religious rhetoric in the media before accepting it as valid to prevent harmful views from gaining clout.

Recent litigation has confirmed that Intelligent Design should not be considered an option when seeking a method of knowledge-seeking that holds religion and science as compatible. 150 years after the publishing of Charles Darwin's *Origin of Species*, parents and religious organizations (including Intelligent Design advocates) still fight to prevent evolutionary theory from gaining its rightful place in school curriculum. The landmark federal case of Kitzmiller v. Dover Area School District (2005) was the first in which plaintiffs successfully challenged the Pennsylvanian public district's policy of teaching Intelligent Design as an alternative to

evolution (p. 3). The United States District Court for the Middle District of Pennsylvania found the practice in violation of the Establishment Clause of the First Amendment, which prohibits government from advancing religion (Kitzmiller v. Dover, 2005, p. 2). As a result, teaching Intelligent Design in the public school classroom violates the establishment clause of the First Amendment, which states "Congress shall make no law respecting an establishment of religion" (Kitzmiller v. Dover, 2005, p. 9). The heavily researched opinion of the court found the Dover High School policy failed the *Lemon* test, which consists of three criteria used to determine if government-funded agencies such as schools go beyond a neutral stance and advance religion. In the words of Judge Jones, Intelligent Design is not science and "cannot uncouple itself from its creationist, and thus religious, antecedents" (Kitzmiller v. Dover, 2005, p. 132).

The debate over teaching evolution affects the future of America's students and jeopardizes the country as a whole. When pupils are given only a brief mention of the foundational and unifying concept of evolution, their understanding of surrounding ideas in biology--even those acceptable to religious fundamentalists-- is fragmented and incomplete. Ideas such as Intelligent Design are based on faulty logic and portray fundamentalists as misinformed, leading scientists to discredit religious voices in general. As we compete in a global world, our students must be given every opportunity to learn and not be held back due to religious arguments portrayed as science.

Despite the value religion can add to life, fundamentalists must recognize that religious truth is not scientific truth, nor oftentimes historical truth. While myth plays an important role in meaning and value, fundamentalists miss the essential distinction between myth and history. Schoenbaum (2008) shed light on myth's function further: "A mythic narrative is not intended to be factual or historical; it is intended to transcend time and place. The truth it expresses is not

factual; it is intended to be therapeutic and to express meaning and value" (p. 74). The framework Christian fundamentalists operate within tends to substitute religious texts for fact. Then, positions of religious authority figures are accepted with little to no question; a dangerous trend. It is unquestioning conformity we have to blame for countless atrocities performed in the name of God, even today. For once I shall align with Dawkins (2006) when he objected to this very trend: "If children were taught to question and think through their beliefs, instead of being taught the superior virtue of faith without question, it is a good bet that there would be no suicide bombers" (p. 308). Science is subject to continual criticism where that which does not hold up is discarded; religion should be subject to the same. Reason should be essential to faith (Schoenbaum 2008). Science along with many religious systems successfully keep core concepts alive, yet adapt to a changing society. Perhaps it is time for Christianity to do so.

Prescriptions

Both science and religion must adapt to the needs and practices of society to remain a vital body of knowledge. Tension abounds when an ideology or system of thinking about the world fails to adapt to actuality. For example, consider the current situation with fundamentalist Islam in the Middle East. Currently, both extremist fundamentalist and extremist scientific perspectives corrode society's ability to dialogue by accepting only their own, absolute ideas and disregarding all other sources of knowledge. This lack of dialogue polarizes and prevents societal members from being able to utilize all the tools available to make sense of and derive meaning from life. Students' learning is hindered, and when religious groups are portrayed as misinformed, potentially valuable contributions to society are inhibited.

Alternative non-extremist approaches suggested by my research can provide paths which lead to less tension between science and religion, and decrease the barriers that arise with

extremist hostility. Such approaches accept that multiple valid methods exist with which one may gain a whole understanding of reality. I will give a brief description of approaches outlined by Stephen Jay Gould, the majority opinion of evolutionary scientists, Michael Ruse, Marcus Borg, and Karl Popper.

Well-known agnostic and evolutionary biologist Stephen Jay Gould's (1997) "Nonoverlapping Magisteria" (NOMA) holds that science and religion exist within independent fields (magisteria) and therefore do not conflict. Under the principles of NOMA, the authority of science belongs to the empirical world, while religion's authority addresses ideas of morals and meaning. Gould (1997) emphasized that while these fields may venture closely to one another, they do not overlap (para. 16). Questions that require answers from both teaching authorities may draw from science to address empirical aspects and philosophy to address non-empirical aspects. However, Gould's critics note his concept accomplishes reconciliation by relegating religion, ethics, and morality to a small magisterium while science is afforded a large one. Dawkins insisted the independence afforded by NOMA is an oversimplification, and contended, "Religions make existence claims, and this means scientific claims" (as cited in Schoenbaum, 2008, p. 77).

One could adopt the position of a majority of evolutionary scientists: in the 2003 Cornell Evolution Project, Gregory W. Graffin and William B. Provine polled and received responses from 146 professional scientists elected to various scientific honor societies. Not surprisingly, Graffin and Provine (2003) found the majority of evolutionary scientists personally reject religious beliefs (para. 6), yet they "see no conflict between religion and evolution" because they view religion as a product of human evolution rather than social change alone (Graffin & Provine, 2003). These scientists view human evolution as the force which developed cultural

change, which then led to the development of religion[s]. If some of presumably the world's leading authorities in science can still "hold a compatible view of religion and evolution" (Graffin & Provine, 2003) for society, then why cannot members of the public who also reject religion follow suit? The scientists surveyed show it is indeed possible for one to abstain from holding religious beliefs, yet still understand that religion and science do not represent mutually exclusive viewpoints.

Another way of conceiving the spheres of scientific and religious knowledge is by distinguishing between "methodological naturalism" and "ontological naturalism" (Schoenbaum 2008). Philosopher of biology Michael Ruse suggested we view science as a form of methodological naturalism, where observations and proven facts about matter are used to explain the natural world in terms of natural phenomena only (as cited in Schoenbaum, 2008). Methodological naturalism cannot be extended to explain the metaphysical, where other sources of knowledge are more suited. In *The Stanford Encyclopedia of Philosophy*, David Papineau (2009) reported that this philosophical orientation maintains "natural science itself requires no specific attitude to religion, and can be practised just as well by adherents of religious faiths as by atheists or agnostics" (Philosophy & Science, 2009, para. 2). In addition, science may describe our observations of the world mathematically and even metaphorically without being ontologically correct. "Ontological naturalism" relates to the nature of being and describes what is real. Ruse downplayed the application of science to ontological issues and argued that the field of science represents an incomplete picture of reality; while it may indeed make conjectures about ontological ideas, the realm of ontology belongs more to the category of religion and philosophy (Schoenbaum, 2008). Ruse's reconciliation between science and religion allows one to "fully accept evolution and yet believe in the existence of supernatural realties, actions and

concerns" (as cited in Schoenbaum, 2008, p 10). Individuals who utilize this way of thinking would be able to employ both scientific and religious mindframes. Still, Ruse's philosophy takes the existence of supernatural phenomena as a genuine aspect of religious beliefs, which is problematic for some who discredit the supernatural as valid.

The concept of "panentheism" may resolve intellectual difficulties atheists and non-believers have with such phenomena. Oregon State Professor of Religion Marcus Borg (1997) asserted panentheism as an acceptable way of thinking about God and the world. In this frame of mind, God is not separate from or equal to the universe, but beyond it-- simultaneously transcendent *and* immanent. Everything is *in* God, while God occasionally discloses himself as here with us. Panentheism is not to be confused with pantheism, which translates as "everything *is* God." Borg (1997) traced panentheism back to the roots of Christian and biblical tradition, but pointed out that many people are unfamiliar with the concept and instead know more of what Borg deemed "supernatural theism," or a God who is "out there, and cannot be experienced but only believed in" (p.12).

Borg believed the importance of panentheism lies in its ability to settle intellectual problems associated with supernatural theism. If God is beyond, and not separate from the universe, much of the difficulties associated with God do not exist (Borg 1997). Borg's thoughts agree with traditional Christian theology, in which God is not physically located in or as one part of the universe. God was physically incarnated at one time in the body of Christ. After his crucifixion the more appropriate Christian view is to think of God as the ground of being for the universe, as in the electricity that allows a light bulb to shine. This circumvents a journey into the empirical realm, and allows supporters valid mystic experiences without making claims that must be substantiated by scientific evidence.

Karl Popper formulated yet another concept of reality when he described three dynamic and interrelated "Worlds" within which we live, all three subject to critical evaluation (as cited in Schoenbaum, 2008). World One is comprised of objective reality; the solid and concrete parts (things) of our experience. Our experience of the objective World One is limited to our senses as well as the accuracy of our instruments, as demonstrated by research showing our perception of solid surfaces are actually tiny particles constantly in motion. More and more often we become aware of something previously imperceptible, which raises the question of how much more of the world our senses and instruments can capture. Schoenbaum (2008) asserted concerning World One, "[T]here may be nothing more, but that is highly unlikely" (p. 24), yet we receive no explanation for Schoenbaum's claim.

The mental states of psychological interactions, conscious, and subconscious desires make up World Two. Some examples include reasoning, desire, intellect, and will (Schoenbaum 2008). We can think about World Two by relating it to World One. Schoenbaum (2008) described the relationship as follows: "The objects we perceive in World One have their counterparts as mental phenomena in World Two" (p. 24).

World Three contains the fields of knowledge and skills produced by the first two Worlds, and are the basis of how we relate to each other and reality as a whole. These aspects of culture may be revealed as the physical realms of art and music or they may take shape in the areas of mathematics, sociology, science, and religion. Schooling and social interactions impress World Three upon us; through these our human cultures form. While this category can be abstract, it may also overlap with other fields. To illustrate: a person's knowledge and skills of medicine (World Three) leads to a desire (World Two) to create an artificial heart (World One)

These Worlds' fluidity help us see that the one constant in life is change. We have seen this dynamic nature reflected in science with its acknowledged dependence on provisional information. Science is revised in ways inconceivable to those who originally described the objective world's laws and theories. Such descriptions give us the 'how', but rarely the 'why' or even the "inherent character" of the world (Schoenbaum, 2008, p. 66). For example, Newton could not explain what characteristic of matter is responsible for the force we call gravity, but merely described how it works. Even the objective reality of World One, trusted for so much of what we experience, provides a limited knowledge of the human experience.

Although our society has uncovered magnificent findings thanks to science, modern physics give us further reason to question if science can provide a whole and accurate understanding of reality. Our theoretical constructions allow us insight toward the workings of the universe, yet are not a working model of absolute reality (Schoenbaum 2008). Most scientists will acknowledge our models' incompleteness and even our inability to fully grasp the very things we propose. Yet, our theories are held out as the real thing. We must remember we are inherently limited by our senses and our perceptions of reality; science provides but *one* pragmatic method of understanding the world.

The approaches of Gould, Ruse, Borg, Popper, and others demonstrate a fraction of alternatives to polarizing extremes that dominate much of the tension we see today. Now more than ever, we must diligently examine the perspectives we use to understand the world. We must move away from harmful viewpoints that hinder learning and alienate us, and work toward understanding opposing viewpoints through non-hostile dialogue. If we actively engage in such endeavors, our society will be able to more successfully offer both scientific and religious worldviews as tools to fully understand reality.

Conclusion

At this time, I will refer again to the words of Linker (2007), who illuminated the urgency of the issue:

> The last thing America needs is a war of attrition between two mutually exclusive, absolute systems of belief. Yet this is precisely what the new atheists [Dawkins included] appear to crave. The task for the rest of us—committed to neither dogmatic faith nor dogmatic doubt—is to make certain that combatants on both sides of the theological divide fail to get their destructive way. (p 18)

After examining Dawkins, we have seen that his reaction and that of scientific extremists is a response to increasing religious fundamentalism. While not all scientists are committed to "dogmatic doubt," some experts do advocate a form of extreme scientism dedicated to the denial and abolition of any sort of faith. We have also seen how certain religious extremists deny vital scientific ideas and instigate unnecessary controversy. The scientific and religious perspectives both contain suppositions with evident limitations, and both perspectives can be exercised to harmful extremes. On this journey toward understanding, we need to recognize such constraints and acknowledge those methods of knowledge-seeking which differ from our own. To avoid polarization and the crippling hostility it brings, we can adopt one of the methods outlined by Gould, Ruse, Borg, Popper, and others, or we can look toward other sources that prove more useful. Regardless, we must examine both religion and science critically to prevent this conflict Linker speaks of and learn as much as possible about both in order to appreciate their scope as well as their limits. These steps will enable us to cast aside ignorance which so often leads to rash exchanges and adopt a well-informed worldview that can help us seek knowledge more wholly. Let the word "faith" not mean "belief in spite of evidence otherwise," but the sincere and

examined trust in a reality beyond that which is our own, a different idea of truth which provides methods of relating to humanity that cannot be provided by science alone.

In conclusion, my research has shown that the hostility evident between the Christian religion and science is largely due to the extremes of either worldview. These polarized perspectives do not allow diplomatic relations between adherents of either worldview and can lead to alienation as well as inhibit learning. A non-extremist worldview is necessary to reconcile the increasing hostility between science and religion. As we move into a century of radicalism and strife, it has become increasingly important to understand the perspectives from which a scientific worldview and a Christian religious worldview stem. Fuller understanding can help us move away from extremist positions and decrease barriers that stand in the way of advancing human knowledge. Only through such understanding can we increase dialogue about our differences and move beyond barriers that harm and hinder society.

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