A 21st Century Debate on Science and Religion

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Edited by

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FOREWORD

ALFRED PRITZ

This book is a summary of a congress held on 27-29th August, 2015 at the Sigmund Freud University in Vienna, Austria. It is also a result of two other congresses, held in May 2011, and 2006 in Teheran, Iran. At all three congresses, both the speakers and the audience focused on the topic of science and/or religion. From our point of view this question is central to the search for truth, and central regarding discernment of the proper relationship between science and religion.

The search for truth is an interpersonal experience, but also a personal one. This means that we exchange our views and knowledge on what we call truth, but find that it lies in the personal, subjective world. Finding your personal truth is a result of all learning experiences made with people in your own history.

Finding truth is a topic in both science and religion. The characteristics of the findings sometimes overlap regarding method-empirical or qualitative aspects, but they differ at the core. One might say that immersing yourself in religion has a clear goal–which is to find certainty or God. In science, the findings are always provisional and the researcher knows it, as long as he or she is not a believer in his/her own beloved results. Science opens the door for new questions.

I also want to mention the spiritual and mystical aspects of human nature: the beyondness of moving yourself in the unknown sphere of a utopian world is difficult to grasp, and can be found in both science and religion. And this is beyond any measurement. In the book at hand you will find a variety of different views. It is indeed a bouquet of flowers, showing us how bright and wide the field of discussion is.

PREFACE

FRASER WATTS AND SHIVA KHALILI

Debates on religion and science are changing, as far as both ‘religion’ and ‘science’ are concerned, and those changes are represented in this volume. It arises from a Congress held in Vienna in August 2015, jointly organized by Sigmund Freud Private University and the International Society for Science and Religion. The editors of this volume are members of the International Society for Science and Religion (ISSR), and Shiva Khalili is also at Sigmund Freud University.

The early decades of work on science and religion focused largely on Christian theology. The Christian colleges and seminaries of the USA played a leading role, and their focus was very much on the Christian tradition. But Christianity is an unusual world religion in many ways. It is much less a matter of cultural identity than most other religions, such as Judaism, Islam or Hinduism, and has become much more a private matter. More than with any other religion, Christianity is the subject of personal opinion and commitment, and less a matter of public identity. This is partly the result of a range of Reformational movements such as Lutheranism, and partly the result of other social developments in western civilization, including secularization.

Christianity has also had a distinctive relationship with science. It has been much more closely intertwined with modern science (at least since the seventeenth century) than any other religion, and debates between Christianity and science are heavily influenced by their shared and intertwined history. Only Islam has had a comparable engagement with science, which was in a much earlier period.

It is becoming increasingly important to widen the science-and-religion conversation beyond Christianity. Though it is very demanding to bring the whole range of religious traditions into dialogue with science at the same time, it is helpful to keep at least two religious traditions in play and not to focus exclusively on Christianity.

At the Vienna Congress scholars from different cultural and religious backgrounds were present. Scholars from the Christian tradition represent the largest single group in this volume, but we are pleased to have two chapters from scholars from an Islamic background (Khalili and Gavahi), and there is also a chapter from a religiously uncommitted scholar (Ruse), and a Foreword from the Jewish scholar of psychoanalysis, Professor Alfred Pritz, the Rector of Sigmund Freud University, where the Congress was held and on which this book is based.

While Christian scholars have been largely occupied with topics such as evolution and the Big Bang, and with issues about divine action, scholars in Islamic countries have been equally concerned with the relationships between humanities, social sciences and religious studies. Challenges between Islam and science have often focused on the value-laden fields of law, politics, economics and the social sciences.

There has also been a broadening of the dialogue between science and religion in Christian countries to include an increasing emphasis on the human sciences. This volume represents the gradual broadening that has been discernable in recent years in the range of sciences that are brought into dialogue with religion. Initially, the main emphases were on physics and evolution, but there has been increasing interest in the dialogue with the human sciences.

One of the most striking omissions from many science and religion courses has been the scientific study of religion. There is, potentially, a very interesting dialogue to be had between the self-understanding of insiders in the religious tradition, and an outsider's perspective on the various scientific disciplines that study religion: biology, psychology, sociology, anthropology, and so on. Several of the chapters in this volume reflect this shift towards including the scientific study of religion, and several chapters take a particular interest in the role of religion in human evolution.

Other chapters are concerned with the background assumptions that tend to be made when science and religion are brought into dialogue. Lurking behind many of the debates between science and religion are the assumptions of scientific naturalism with which science in the West has become intertwined. Arguably, it is these assumptions, at least as much as any findings from empirical scientific enquiry, that create problems in the relationship with religion.

Relations between the religions of the world are not always harmonious, as everyone knows. That is part of the context for their respective engagements with science, as the first chapter of this book by Clayton explores. There is an urgent need, for the sake of the survival of humanity, for better relations between the religions of the world. This is a humanitarian as well as an academic issue. Relations between Judaism and Islam, and Islam and Christianity are often particularly vexed. Yet, it might be said that an engagement with science tends to bring out the most rational side of each religion. In so far as that is the case, it is potentially very helpful to widen the dialogue between religion and science so that it proceeds on a multi-faith basis. The International Society for Science and Religion is particularly committed to that goal.

In Chapter two, Nancey Murphy explores the closely intertwined histories of natural science and Christianity, focusing particularly on the concept of 'laws of nature,' a concept that has become problematic for the relationship between science and religion.

In Chapter three Michael Stenmark describes religious and secular forms of naturalism, and discusses their effects on the Weltanschauung (worldview) with the example of mind-body problem. Then in the following chapter, Wesley Wildman discusses another result of the science-based narrative, the rise of anti-supernaturalism and the increase of religious naturalism. He argues that this trend will change the political and socio-economic landscape, and suggests that societies will need to work out how to respond to this new trend.

Building on that in Chapter five, William Grassie suggests that it is important in religious education to recognize scientific achievements, adopting a Big History perspective. Modern sciences claim to offer a grand narrative that unifies the knowledge that arises within the many languages of science. That can enrich each individual's understanding of the nature of persons, and their sense of what it means to be a person.

In Chapter six Fraser Watts discusses the assumptions of Cognitive Science of Religion about the origin and function of religion, and suggests an alternative position about the evolution of religion that better addresses its social context, and recognizes the rich diversity of religion. Evolutionary explanations offer an approach to the role of religion in the formation of frameworks of meaning. In Chapter seven, Shiva Khalili discusses the challenges and opportunities for identity formation and renegotiation in

the 21st century, with its diverse narratives and meaning-giving beliefs and ideas.

In chapter eight, Wentzel Van Huyssteen further explores human personhood at the intersection of modern evolutionary theories and Christian theology. Then, in Chapter nine, Noreen Herzfeld, discusses the relationship between Christianity and ontological materialism (such as one finds expressed in AI discourse) with respect to their implications on human self, and in particular, age-old questions of (im)mortality.

Then, in Chapter ten, Michael Ruse elaborates arguments for the independence of the sciences and religion, taking an accomodationist position that permits the co-existence of science and religion. He discusses a set of questions that are unanswered by science and suggests that religion may be able to address them in its own way.

In Chapter eleven Abdolrahim Gavahi describes an Islamic view on the meaning of science and religion, arguing for mutual recognition and respect between the two, and distancing himself from voices in the Islamic tradition that have been disparaging about science.

Finally, in the last chapter of this book, Michael Reiss argues for the respectful consideration of a diversity of value and ethical standpoints and worldviews in schools, whether that be in faith-based or secular schools.
Taken as a whole, the chapters emphasize the importance of a respectful dialogue between scholars of religions and the contributions of the natural sciences in helping to foster a safe environment for learning, development and growth for all individuals and groups, without any discrimination or aggression between followers of different traditions.

CHAPTER ONE

SCIENCE AND RELIGION IN A WORLD OF PLURALISM

PHILIP CLAYTON

In the 'Science and the Spiritual Quest' project some years ago, we gathered together scientists from multiple religious traditions who were deeply interested in whether these two important sides of their lives could be integrated. What none of us had expected, but should have known, is how very different were the problems we were struggling with. The Buddhist scientists seemed not to feel any threat from the sciences—even less than the Hindu scientists, who struggled with the limitations of scientific knowledge. Both had particular interest in consciousness and its powers. Christian and Muslim scientists struggled greatly with evolution and divine action; they spoke of the rejection of science by many in their communities, who felt that this was the only way to preserve the core tenets of their faith. By contrast, the Jewish scientists, also believers in God, felt less conflict; they seemed comfortable with physical and neurological accounts of evolution and consciousness. Of course, there are vastly different responses within each individual tradition. That fact does not decrease the challenge of pluralism, however; it greatly increases it.

Beyond the Warfare

We live in a time of deep division: will the coming years reveal an increasing number of partnerships between science and religion, or will we see a battle to the death between the two?

Ours is a world utterly transformed by the results of the sciences. It's probably true that virtually everything you see around you at this moment—the room where you sit, the building, the city, its electricity, infrastructure, and means of transportation—are direct or indirect results of science.

Scientific assumptions and scientific thinking may rest only skin deep for much of the world's population, but no such ambivalence pertains to the *fruits* of science. One cannot state this point too strongly. It is true that religious people in much of the world are actively pushing back against what they call 'the worldview of science.' Many question the methods, the practices, the assumptions, and the funding priorities of science. They view research scientists with a suspicion bordering on complete rejection. And yet the same people bring no such skepticism to the things that science gives them. Everywhere on this planet people want good cell phones, good cars, state-of-the-art hospitals, safe food, modern cities, stable bridges, cheap manufactured goods, the best industrial products and the newest, most exciting electronic gadgets.

It's a strange situation, if one stops to think about it. The world has never been more reliant on the fruits of science. Yet the tree of knowledge that produces this fruit is widely viewed as suspect, even dangerous. And, around the world, it's most often religious people who are the most vocal in condemning the very theories and assumptions that produce their favorite products.

'Religion *versus* science': in a world torn apart by wars, this is the most famous warfare of our time. On this warfare model, science exists as a challenge to religion, and the duty of religious persons is to protect their tradition against the dangerous encroachments onto their territory by scientists, whose major goal (they believe) is to destroy religion. Both sides of the battle believe that they must be *kampfbereit,* ready to fight at a moment's notice.

Two sides at war—this, at any rate, is the dominant view of our times. Ironically, the very biology that the religious side contests helps to explain the situation. Over millennia, humans evolved to affiliate with an in-group and to fight members of the out-group. Evolutionary history helps to explain how we instinctually respond when there is a conflict: we take the side of our in-group and go to war. We defend the group that forms our identity at the time and we attack its enemies. As one title of the Vienna conference put it: *Science. Or religion*.

I wish to focus instead on the peacemakers, and on the paths to peace. There are many who seek solutions, who prioritize partnership over war. In every religious and scientific community there are those who are already working to overcome the myth that religion-science warfare is the

only possible form of relationship. These few pages lay out a vision of partnership, of science *and* religion. Specifically, I will argue that the future of this relationship does not lie in the integration of 'religion as such' with 'science as such,' but rather in constructive relationships between the sciences and *each particular religious tradition*. My thesis that harmony will be found (if it can be found at all) not at the level of generalities, but in the opening of specific religious traditions to the world of science. Until we acknowledge the vastly different challenges faced by the different religions, genuine progress is unlikely.

In making this claim, I draw on the new field of 'science and comparative religious studies,' which promotes science-religion discussions within the unique context of each individual religious tradition. This discipline studies the diverse ways that the various religions are grappling with scientific methods and results, seeking to understand and explain these differences, but also noting common features that arise across multiple traditions. In social scientific terms, comparative work of this kind employs 'emic' rather than 'etic' methods; it uses the language (scriptures, beliefs, practices) that religious people use, rather than non-religious accounts of what they 'really mean' or 'should' mean.
Before we get to the differences, however, let's see how much common ground we can find.

Partnerships more Urgent than Ever

> *At the 2009 World Parliament of Religions meeting in Melbourne, we organized three sessions on science, religion, and the environment. Over the course of the day some 600 delegates participated, representing most the religions of the world. After presenting his data on climate change, Nobel laureate Peter Doherty walked to the front of the stage and addressed the audience. "For 15 years I have traveled the world, presenting this data, but few have responded. I am not religious in any way, but I well recognize the emotional power of your various traditions to transform individuals and motivate them to live differently. I appeal to you from the depths of my heart to bring this message to your communities, to use all the resources of your tradition to influence how they live and act. Religion can build on the scientific facts and, I hope, help to bring about real change."*

The climate crisis is not the only area of common ground, of course, although it has become a vitally important one. Science-religion partnerships are in fact crucial across a wide variety of areas: medical ethics and assessments of quality of life profit from religious input. Moral

outrage at the design and use of atomic, biological, and chemical weapons is often fueled by religious intuitions about what is unacceptable for one human being to do to another. Major pharmaceutical companies have convened religious scholars to assist them in sorting through the ethical issues that are raised by powerful new psychotropic medications. More generally, the growth of medicine and technology raises thorny ethical dilemmas. Yet there are relatively few religious thinkers who are well enough versed in the scientific details and nuanced enough in their judgments to be able to make useful recommendations for when and how the respective technologies should be used.

The influence of our various fields does not stop with ethics, however. Cutting-edge scientific research raises some of the most interesting conceptual questions that humans have ever encountered. Many people in this room are leading scholars on these various topics. Physics raises fundamental questions about the nature of matter and energy, space and time, the birth of the universe and its far future destiny. Recent work on the origin of life compels us to reflect whether we are more than a biochemical accident and, if so, why and in what respects. Since the time of Darwin, philosophers and theologians have speculated about whether biological evolution is guided in some way, or whether evolution is random. How will we answer Jacques Monod, who advocates this latter view? Monod writes: "Pure chance, absolutely free but blind, is at the very root of evolution" and "All forms of life are the product of chance" (Monod, 1971, 112 and 110). Advances in primatology confront us with the question of whether human beings are really qualitatively different from other advanced mammal species, as our religious traditions have taught, and, if we are, exactly how we are different. Comparative studies between humans and bonobos, for example, raise the question about which of the two species is the more moral, and which is the more brutal, in a dramatic manner.

Finally, the rapid advances in the neurosciences, fueled by greatly enhanced imaging techniques, raise urgent questions about the nature and causes of consciousness and cognition, of rationality and morality. Does the power of neuroscientific explanation prove that we are (as Francis Crick once wrote): "nothing but a pack of neurons" (Crick, 1994)? Does it force us to conclude (as a well-known neurologist put it at a conference), "Wires and chemicals, that's all we are—wires and chemicals"? Many religious (and non-religious) scholars stand opposed to this view. They make the case that we are somehow more, that our conscious experience is

unique among the species on this planet. They stand much closer to the response made by the secular Jewish scientist Melvin Connor:

> In an engaging study of the conversations of three-year-olds, in the context of a longer chat between a boy and a girl, this occurred: "Hello, Mr. Dinosaur." "Hello, Mr. Skeleton." These three-word sentences probably contain enough complexity, enough levels of meaning, and enough imagination to ensure that comparable things will never be said by even the most brilliant talking ape… I suspect that we are seeing [in this example] the most rudimentary form of the key to being human: a sort of wonderment at the spectacle of the world, and its apprehensibility by the mind; a focusing, for the sheer purpose of elevation; an intelligent waking dream. In that capacity, perhaps, we find our greatest distinction, and it may be our salvation. (Conner, 2002, 170f)

The questions I have just summarized are among the most fundamental questions about human nature and the cosmos that are posed for us by this age of science. These questions arise naturally, compellingly, at the boundaries between recent scientific developments and the world's most significant philosophical and religious reflection. Some of them are metaphysical questions; they entice us into the deepest mysteries about human nature, the origins of the universe, and human beliefs about the Ultimate: God, Allah, Brahman, the Tao, nirvana. But they are also existential questions—questions about meaning, the construction of meaning, the search for meaning. Yet, because they are about *Sinnstiftung*—the creation of meaning—social sciences such as psychology, sociology, and anthropology have important roles to play in researching them.

Ours is a rich field. Exploring the ways that the religions of the world struggle with the implications of contemporary science raises issues that many people care deeply about, whether or not they belong to these religions. For this reason, I make the plea that scholars in this field not allow their books and research papers to devolve into highly technical prose, written for a narrow circle of academic specialists. The greatest work expresses the complex dilemmas and provocative possibilities that emerge at the ever-expanding intersections of science and religion, while remaining broadly accessible. At their best, authors write and speak not merely on behalf of themselves, their own religion, discipline, or culture. Rather, their work is relevant to all who want to know what it means to live on this planet in the 21st century. Their audience needs to be every person who seeks to understand the implications of being part of a single

web of life that is becoming conscious of itself—of its origins and ultimate future.

A Discipline Under Attack

So far, I have spoken in positive terms of commonalities that I believe unite many in this field. But there is also a rather less positive feature that ties together many of the chapters in this book: the authors work in a field of study that is viewed as highly suspicious by scholars, scientists, and religionists alike. Indeed, so great is the skepticism about this book's topic that many critics question whether it is even accurate to speak any longer of 'the' field of science and religion at all. Consider this example:

- The early 'intelligent design' movement rejected the standard scientific picture of cosmology, arguing that a superior science would explain the origin of the cosmos as reflecting the intentions of a very powerful, intelligent being. This 'research program' led in turn to the claim that the standard scientific picture of evolution is wrong, that because many biological structures are 'irreducibly complex,' only a direct divine intention could explain them. Both of these claims amounted to a radical rejection of contemporary science.
- Terrorists bombed the World Trade Center on September 11, 2001. Many scientists and secular people drew the inference that religion is the kind of belief system that justifies killing innocent people. They proclaimed that religion is not neutral but very dangerous, and called for scholars—especially scientists—to work actively against it.
- Out of these two developments the 'new atheism' was born. The claim of its leaders has been that religion and science are fundamentally at odds. As Sam Harris writes, "The truth…is that the conflict between religion and science is unavoidable. The success of science often comes at the expense of religious dogma; the maintenance of religious dogma always comes at the expense of science." (Harris, 2016, 63)
- Although many religions were affected, Christians and Muslims in particular found themselves faced with a painful dichotomy: either support science and leave behind their religious beliefs, or maintain their religion and challenge science. Those who retained their religious identity began to develop arguments against the adequacy of science, and to proclaim the same incompatibility that the new

atheists had alleged. Surveys at the time showed that over half of American evangelicals did not believe in biological evolution.

This list could be continued further, but the point is clear. Both sides have taken an external cultural situation—the recent battle between their two institutions—and internalized it as if conflict were the only possible way to describe the religion-science relationship. Thus, for example, some scientists justify their attack on religion as if it were obvious that everything about religion must be evil, and now more moderate scientists are also beginning to view religion with suspicion. Likewise, some religious scholars attack science as if it is their #1 enemy. Neither group seems to recognize that they are not just working out the internal logic of their own field as much as responding to perceived aggression from the other side.

The phrase 'religion and science' suggests that participants are involved in a single debate characterized by a common set of questions. Is there some sense in which this is true? Or, will it turn out that scholars in this field, and the general public as well, are actually involved in a broad range of significantly different debates? Or, are both things true?

I will defend the third option, which means giving a positive answer to both questions. First, there are respects in which scholars from across the world's religious traditions are working together constructively on overlapping topics characterized by common questions and assumptions.

For this to happen, at least three conditions must be met:

(1) *There must be a core set of agreed-upon data and assumptions, however minimal*. Publications and conferences in the field show that, differences notwithstanding, there is a baseline set of agreements and commitments that are shared across many of the discussions. One finds numerous examples of this in the library of 200+ volumes published together by the International Society of Science and Religion under the leadership of Professor Pranab Das (http://www.issrlibrary.org/).
(2) *One must find clear and honest formulations of disagreements*. Can scholars clearly name the issues that threaten to separate the participants into warring factions? For example, for one research group, all valid explanations must be naturalist explanations, of the sort accessible to contemporary science; for another group, if

explanations do not include some reference to God's supernatural actions, they cannot be valid.

(3) *One must find constructive proposals to bridge differences*. Having named their differences, can scholars then defend their views in ways that are accessible to others? Scholars are trained to analyze differences, formulate the underlying assumptions of the other side, and construct theories that might synthesize opposing positions. Will the coming years produce significant new mediating proposals on the major unresolved issues of our field?

Back to the Frontiers

The birth of religion and science as a field is often located in the 1960s. It is sometimes connected with the publication of Ian Barbour's *Issues in Science and Religion*, published in 1966, almost 50 years ago. I can remember the excitement of early work in the 1980s and 90s: the struggles to understand, the breakthroughs in finding common ground, the excitement of sharing results with one's lab or religious group, the first conferences where understanding was reached and shared.

What it would be like to recover some of that open spirit of inquiry that characterized those early years, the sense of exploration and discovery? What would it take for such a renewal to come about? One would have to identify the features of inquiry at the boundaries of religion and science where fruitful dialogue occurs in its most sophisticated forms. A list of the qualities of such inquiry would include some of the following qualities:

- a willingness to compromise;
- a mindset of quest, journey, learning, exploring;
- an interest in new data, in new discoveries humans are uncovering about the world, and about ourselves;
- an attitude of openness. Some will be exploring the philosophical or ethical implications of their science. Others will be motivated by 'faith seeking understanding,' though even they will not be claiming that they know all the answers in advance;
- an excitement about differences between discussion partners, with the conviction that pursuing these differences can lead to deeper understanding.

Let's consider this last criterion for a moment. What does it point to, and what does it reveal?

Irreconcilable Differences

When two people file for divorce in the United States, they often cite what they call 'irreconcilable differences.' The differences between them, they say, are so deep that it was no longer possible to sustain the marriage, so divorce was the only option. Some view it as a good thing that two people who are so different can go their separate ways and escape from their tensions. Others view the separation as a tragedy in at least some cases, believing that if the couple had preserved, and had been more willing to compromise, they would have achieved a good partnership.

In certain cultures, and at certain periods in the past, the marriage between science and religion was seen as a healthy and productive one. Today, however, it is clear around the globe that the conflicts have deepened between the members of this once fruitful partnership. Many commentators (both scientists and religious scholars) are now speaking of 'irreconcilable differences,' and are claiming that a complete divorce is the only solution. Probably the dominant view in the global media is that divorce is the only reasonable outcome. Science and religion, it is said, are like oil and water: they simply do not mix. Therefore, the best thing is to allow them to go their separate ways.

Others among us, including many authors in this collection, hold a different view. We believe that declaring a complete divorce between science and religion is a tragedy. The partnership that they have had could and should be continued. It is somehow essential for the good of humanity. Many of us who identify as Muslim, Jew or Christian, as Hindu, Buddhist, Sikh or Jain, feel that we must speak up when fellow members of our various faiths dismiss science as an enemy of religion. We want them to understand that this divorce is not necessary, that if they do the hard work, if they are more willing to listen and rethink, and if the scientists are willing to do the same, the partnership can still be saved.

Those of us who are scientists argue the same way with our fellow scientists. Sure, we say, some religious people are fundamentally opposed to science, and some religious beliefs are incompatible with science. Still, religion as such is not our enemy. We can learn to build useful bridges between our science and their religion. Indeed, we argue, we have already found some neutral territory, and even some places of harmony. We are convinced that the actual and potential partnerships between science and

religion are valuable enough that it would be a tragedy to declare that the two sides are irreconcilably at war.

Whether you pursue the partnerships from the scientific or the religious side, you almost certainly recognize that, globally speaking, ours is not the majority view. Many scientists and religious scholars do not share our position. Some are vehemently opposed to the work that we are doing to establish common ground, and many strongly condemn our efforts.

Not long ago I spoke with a very famous scientist who had just published a book that included some comments about God (and who asked not to be named here). Although not a religious believer, my friend maintained that the *idea* of God might play some positive roles in the development of human history and civilization. This mild suggestion apparently drew outrage from many of his atheist friends. One told him, "You have gone over to the dark side." "What did I do?" he asked me in confusion. "Is it not allowed any more for a scientist to mention the G-word?"

Comparative Sciences and Religions as New Paradigm

Predictions of secularists notwithstanding, religion is not 'withering away.' Globally, it is expanding faster than ever. Yet, religious language is often used to promote dogmatism, the rejection of science, even violence.

There is some encouraging data, however. In most cases, extremism in religious communities is inversely correlated with the degree of their engagement with science. To the extent that one can promote a serious and ongoing engagement with the methods and results of the sciences, one decreases the probability that religious communities will turn toward fundamentalism.

The challenge is that each tradition makes its peace with science in different ways (so perhaps the title of this field should be not 'Religion and Science,' but rather 'Religions and Sciences'). Until scholars in this area learn to understand and acknowledge the vastly different ways that the various traditions engage with science—what each tradition wants, what it needs, and what it fears—they will not really be able to answer the broader questions. Instead, they will continue to misunderstand and misrepresent other religious traditions, presupposing identity where in fact significant differences arise.

Let's consider some examples. I begin with two religious traditions that have been able to live in a mostly non-conflicting way with science: Judaism and Buddhism. We will then turn to other traditions that continue to struggle, unsure of how to incorporate the world of science into their thought and practice.

The Jewish intellectual tradition has been able to incorporate modern science with relative ease. The reasons lie deep in the Jewish tradition—in midrash, in the Rabbinical tradition, and in the destruction of the Jerusalem Temple in 70 CE. Although all of Tanak, the Hebrew Bible, reveals the nature of the Almighty, the first five books (the Torah) have the highest authority for Jews. Observance of the Mitzvot, the 613 commandments in the Torah, stands at the center of Jewish observance, and hence Jewish identity. Because the actions of observance are the most important, the interpretations that one offers about purely theological matters, and even about whether God exists and acts, come in second place.

Concern for ortho*doxy*, or right belief, thus never played the same role for most Jews that it later played for Christians. Over the centuries, Jewish thinkers were able to draw on a wide variety of philosophical schools to express emerging understandings of Jewish identity and Jewish views of reality. Rabbinical discourse valued multiplicity, difference of opinion, and debate. When modern science arose, the sphere of debate was simply expanded to include the new theories about the natural world. Jewish communities generally valued the growth of knowledge, and many observant Jews became leading scientists.

Over the last decades, Buddhism has also evolved to become one of the most science-friendly religions on the planet. As always, there are personal and political reasons behind this phenomenon. The 14th Dalai Lama has promoted and personally sponsored a wide variety of projects in religion and science. His famous comment is often repeated: "If scientific analysis were conclusively to demonstrate certain claims in Buddhism to be false, then we must accept the findings of science and abandon those claims" (Dalai Lama XIV, 2011). Still, the reasons for the Dalai Lama's support of science lie deep within Buddhist thought and practice. He speaks for much of the Buddhist tradition when he writes, "The … dimension … of basic spiritual well-being—by which I mean inner mental and emotional strength and balance—does not depend on religion but comes from our

innate human nature as beings with a natural disposition toward compassion, kindness, and caring for others" (Ibid.).

Buddhism, like Judaism, places its major emphasis on practice. Meditative practices are central, along with certain types of experience and states of consciousness that meditation can produce. In Mahayana Buddhism in particular, achieving the state of compassion, and expressing it in action, is the highest goal; metaphysical concepts are important only to the extent that they promote this outcome. Compassion simply means the desire "to alleviate the suffering of others and to promote their well-being." The experiences that meditation produces are not supernatural; they come from "a natural instinct, [they are] bequeathed by our biological nature as animals that survive and thrive only in an environment of concern, affection, and warm-heartedness—or in a single word, compassion" (Ibid.). In short, concern for others is built into our biological nature.

This approach leads to an avid interest in certain areas of science, which Buddhist practitioners, like many Hindu practitioners, view as natural allies to their own spiritual quest. In particular, many Hindus look to science to support traditional claims about the benefits of meditation and to verify the unusual psychological and physiological achievements of advanced meditators. Many practitioners are willing to distance themselves from ancient metaphysical teachings in the belief that what is most important to their religious goals will over the long term find scientific support and confirmation.

While Judaism and Buddhism offer the most unambiguous cases, many other traditions have openings to science that are currently being emphasized and explored. Let's consider three examples very briefly. First, Jainism provides a largely physical account of karma and a body-based justification of its core ethical tenets. Jains do not require belief in God. Instead, they look to science to verify the remarkable abilities of their advanced practitioners or *sadhus*. They are also eager to use notions such as the conservation of energy or entropy to help explain their ancient doctrines.

The ancient Chinese philosophy of Taoism shares many features with the other world religions: it makes metaphysical claims, promotes a deeply mystical understanding of reality, and offers ethical principles to guide practitioners in their interactions with nature and with each other. Yet there is little in Taoist thought that cannot be harmonized with science.

Indeed, in a variety of books with titles such as *The Tao of Physics*, Taoist philosophers have argued that contemporary science continues to move closer and closer to Taoist principles.

The indigenous traditions offer a particularly important case. As the most ancient spiritual traditions on our planet, one might here expect the greatest distance from science. Instead, indigenous ways of life are often deeply ecological, suggesting remarkable parallels with the ecological sciences as they have evolved in recent years.

I believe that, of the various traditions we have been considering, none has more global significance today than the engagement of Islam with science. Responses are radically divided, with some defending the full compatibility between the two, and others—probably the larger number worldwide—arguing for fundamental incompatibilities. To find solutions, Muslim scholars and imams are engaging with interpretations of Qur'anic texts and the classic traditions of Islamic philosophy and theology, as well as scientific theories and the history and philosophy of science. They face a series of contested issues: Qur'anic support for the pursuit of knowledge (scientific and otherwise) of the natural world; how to connect natural causes with God as the final cause of all beings and all phenomena; natural knowledge and revealed knowledge; the apparent randomness of the evolutionary process versus God's direction of all creation; the uniqueness of human beings; naturalism versus God's supernatural acts; and, of particular importance, how to read the Qur'an so that it does not become a direct competitor to science, while still allowing the scriptures to function as the authoritative record of the teachings of the Prophet Mohammed. This last task involves finding an appropriate hermeneutic for Qur'anic interpretation in the age of science—a difficult but urgent task.

Despite the widespread pessimism about this project among both Muslim and non-Muslim scholars, I am confident that solutions can be found. Islam does *not* face a forced decision between a fundamental rejection of modern science on the one hand, and a de facto rejection of the entire tradition on the other. The Doha Declaration of 2008 provides an excellent example. It opens with the words:

> 1. We agree that the so–called 'warfare between science and religion' is unnecessary and destructive—to religion, to science, and to the future of our species and our planet. It has become possible in our day to formulate a unified vision which takes into account the best of science and the best of the religious traditions, without confusing the two.

> 2. We call for worldwide attention in the 21st century to the need to work towards change on a very fundamental level—a change in the ways of thinking, believing, and knowing that have dominated the modern period. It is possible in this century to bridge the gap between the cultures of science and religion. Succeeding in this task will require greater openness to contributions from all fields of knowledge, including science, philosophy, the arts, etc.
>
> 3. We reject the view that all human knowledge is scientific knowledge. Scientific results cannot directly prove the existence of God any more than they can falsify God's existence. Conversely, religious beliefs are not the same as scientific theories, nor are scientists in the position to make final pronouncements on religious matters. We encourage an interdisciplinary approach to the discussion of science, culture, and religion. Yet this discussion must be conducted with discipline and intellectual rigor by people with the requisite expertise.[1]

Consider also the stance of the Muslim scholar and Sufi expert, Fethullah Gülen. He writes unambiguously: "Science cannot contradict religion, for its purpose is to understand nature and humanity, which are each a composition of the manifestations of God's Attributes of Will and Power" (Gülen, 2000, 7f.). By speaking more generally of religion, Gülen integrates the harmony of science and religion with a harmony between the Abrahamic traditions: "Islam, Christianity, and Judaism all come from the same root, have almost the same essentials, and are nourished from the same source. Although they have lived as rival religions for centuries, the common points between them and their shared responsibility to build a happy world for all of the creatures of God make interfaith dialogue among them necessary."

When it comes to the Christian dialogue with science, one is struck both by the strengths of the engagement, and by its shortcomings. Some of the most extensive literature comes from Christian authors, and virtually every topic of Christian theology has been brought into dialogue with the sciences. At one end of the spectrum, one finds conservative and

[1] The Doha Declaration of 2008 stemmed from the "Science, Cultures and the Future of Humanity" conference, May 30–June 1, 2008, which was organized by the Al Jazeera Center for Studies, the think tank of the Arabic television network Al Jazeera. For more information, see
http://islam-science.net/dialogue-in-doha-science-cultures-and-the-future-of-humanity-1498/ or
http://www.templeton.org/templeton_report/20080723/.

fundamentalist answers that reject science *in toto* as incompatible with Christianity, or that argue that religion actually produces better science than the natural sciences, as in the Intelligent Design movement. At the other extreme, one finds Christian doctrines interpreted in purely scientific terms, so that no supernatural elements remain—Christianity without God, without incarnation, without resurrection, without heaven or life after death ... and without any remaining tension with science. In between these two extremes Christian authors have explored a vast variety of science-inspired interpretations of their tradition.

This radical pluralism can be a strength when it models the variety of ways that compatibilities and incompatibilities with science can be expressed and incorporated. But there is also a dark side. The vast differences between conservative and liberal voices have fractured and fragmented the discussion. Instead of viewing the growing separation as a challenge to be overcome, one side tends to dismiss the other as so deeply wrong that it is unworthy of further attention. Publications, organizations, conferences, and funders are often devoted to the one particular camp or the other, but rarely to the task of finding common ground between them. An outsider might think that competing Christian schools are speaking about different religions altogether. One can only hope that Muslim, Buddhist, and Hindu scholars will do better at formulating the common ground offered by their own particular tradition.

Conclusion: Seeking Common Cause across Differences

In the religion/science discussion there are deep differences between religions and within religions. To affirm that all share—or should share—a common approach and set of assumptions misrepresents the field, which then obscures the real challenges that the dialogue is facing. Yet, in these pages I have also affirmed the positive vision that we are nevertheless involved in some significant ways in a common project. Scholarship in one area of science or in one religious tradition can profit those who are working in other traditions. As scholars study relations at the various intersections of science and religion, a shared body of knowledge emerges. I close with the hope that participants will be able to express their differences without rancor. It is possible to work out contrasting positions, pursue diverse research programs, and compose different arguments without ad hominem attacks the others, interacting with compassion rather than derision. It is inspiring, for example, to study the examples of Muslim, Jewish, and Christian scientists who over the years have accepted

the call to productive scholarship, and who have thus have been able to make progress even in areas where real conflict arises.

Deep scholarship involves deep listening. The dialogue is at its best when participants make real connections across the diverse cultures of science and religion, finding common causes, common interests, as well as common challenges. The aspiration is large: to overcome the warfare between science and religion; to reconnect fact and value into a productive relationship; to replace rhetoric and violence with careful study and reasoned discourse; to seek what Jews call *tikkun olam*—the healing of the world.

Common values can bridge competing perspectives. At our best, we value empirical data and seek to apportion our beliefs with the evidence. Recognizing that specialization can lead to fragmentation, we value interdisciplinary scholarship and the crossing of boundaries. We know that the natural sciences, although crucial for knowledge of the world, do not tell the entire story; rather, the techniques, methods, and conclusions of the social sciences also play an irreducibly important role. And both are supplemented by the humanities—by philosophy, ethics, and religious studies.

In this field, many are motivated by the sense of a deeper dimension than is expressed in mathematical theories. For some, it involves metaphysical beliefs, perhaps based on certain core commitments of their religious tradition. For others, religion surfaces primarily as a dimension of experience, whether they label it 'peak experience,' or 'ecstatic naturalism,' or 'the experience of the transcendent.' And, for others, religion can express nothing more than the sense that there exists something beyond science, something beyond the level of everyday experience. At some point, in the sphere of religion, words break down, and the scholars have to pass the baton to artists and poets—or to the saints, sadhus, and gurus of the various traditions, who represent in their lives and actions the things that religious scholars struggle to express.

For the first time in the history of humanity, humans now face a truly global crisis, one for which we are responsible. We have upset the natural rhythm of the planet, the homeostasis of the biosphere. The effects of human-induced climate change are already producing mass migration, starvation, deaths and extinctions of species. No one will be able to understand the crisis and take appropriate actions unless they listen

carefully to science: to climatologists, environmental theorists, ecologists, and others. Yet science alone will not be sufficient to motivate the necessary response, which is a global turning toward a sustainable, ecologically-based civilization. Science alone will not produce the commitment to radical shifts in policy that the leaders of the world will need to make in the coming few years.

Fortunately, humanity does have a resource to supplement scientific knowledge and technological ability: the call to compassion, and to the sacredness of all life, that resounds across the world's spiritual traditions. These two values, brought to bear on what may be the biggest crisis that humanity has ever faced, can make a crucial difference. If the decision is separation— 'science *or* religion'—then humanity is unlikely to marshal the moral and spiritual resources that are needed to slow the pace of climate change. If the decision is integration— 'science *and* religion'—then humanity has at least a fighting chance.

The stakes are high. Ancient religious traditions must be transformed to become allies rather than enemies of scientific progress—and allies with each other. If they do, they can contribute their value frameworks and their shared call to compassionate action. Finding this common ground in the midst of difference will be necessary if humans are to overcome nationalism and ethnocentrism and respond in time to global climate disruption.

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CHAPTER TWO

THE ROLE OF CHRISTIAN THEOLOGY IN THE CONCEPTION OF MODERN SCIENCE

NANCEY CLAIRE MURPHY

Introduction

I had the opportunity to attend two conferences in Tehran: in 2006, Iran's 'First International Conference on Dialogue between Religion and Science'; and in 2011, a second conference, more limited, on 'Psychology, Religion, and Culture.' The question about the role of Christianity in Western sciences was in the air at the first conference (for an earlier discussion, see Stenmark and Golshani, 2005). When I attended the conference on psychology, I was convinced that psychology, especially its practical side, would have to be different in the Middle East than in the West.

This left open a question: could *all* of the *human* sciences be somewhat (or even drastically) different in the Middle East compared to the West; and especially, would the *natural* sciences have come out differently if the Muslim world had continued to be as central to the development of science as it had been in the past? I suppose that college students in Iran (and elsewhere) study the same works in natural sciences as do Euro-Americans. But could it have been different—better or worse—if Islamic assumptions had had a stronger influence?

Another question I have considered is what counts as the beginning of Modernity in the West. For my students I draw a diagram (a cartoon, really) that shows the Christian tradition, over its first few centuries, merging with Greek and Roman thought. I count the death of Augustine (430) as the date of the end of this process. From that point until the