

Modern Science and Conservative Islam: An Uneasy Relationship

Taner Edis

Published online: 6 August 2008
© Springer Science+Business Media B.V. 2008

Abstract Familiar Western debates about religion, science, and science education have parallels in the Islamic world. There are difficulties reconciling conservative, traditional versions of Islam with modern science, particularly theories such as evolution. As a result, many conservative Muslim thinkers are drawn toward creationism, hopes of Islamizing science, or other ways to retain the primacy of faith while continuing efforts to catch up with modern technology. Muslims argue that science and Islam coexist in harmony, but both intellectually and institutionally, the Islamic world harbors many tensions between science and religion.

1 Introduction

Discussions of science and religion in an Islamic context are invariably complicated. For example, it is easy to observe that today, contributions to natural science from majority Muslim countries are negligible (Hoodbhoy 2007). But disentangling the various social, political, and economic reasons that could help explain this lack of productivity is very difficult.

It is possible, however, to examine a narrower set of questions concerning Muslim thinking about science, religion, and education. After all, among Muslim populations, the public role of religion has undergone a noticeable revival in recent decades. Arguments concerning the compatibility of Islam and science have acquired a renewed vigor, and Muslim efforts to catch up to technological modernity without sacrificing the central public role of religion continue to raise questions about science, secularization, and public education.

Based on Edis 2007. All translations from Turkish are the authors. Thanks are due Michael Matthews for the invitation to contribute to the issue.

T. Edis (✉)
Department of Physics, Truman State University, Kirksville, MO 63501, USA
e-mail: edis@truman.edu

The familiar Western debate over science and religion is framed in a Christian context. Curiously, much of the literature on science and religion originating among Muslims also shares this Christian emphasis. A common modernizing Muslim view has been that Islam does not share Christianity's quarrel with science, being an inherently rational, even scientific, religion. For example, Muslim thinkers often claim that conflicts between science and religion are due to the authoritarian church structure of medieval Christianity. Lacking centralized religious authorities, Islam avoids such difficulties (Şahin 2001, pp. 177–182; Aydın 2000, p. 86). Such thinkers typically add that the relationship between Islam and science should be without friction, as long as the materialist philosophy that has illegitimately been grafted onto science in the secularized West is discarded.

Present reality is far from this ideal of harmony. Both popular and intellectual culture in Muslim lands is marked by uneasiness with those aspects of modern science that are more ambitious than an activity of collecting and cataloguing facts. Moreover, Muslim environments are fertile territory for pseudoscientific notions that promise to harmonize modern knowledge and traditional beliefs. Claims that modern science and technology are miraculously prefigured in the Quran, that science supports divine creation rather than evolution, or that the sciences should be “Islamized” attract attention and widespread support (Edis 2007; Guessoum 2008). Many Muslim ideas about science and religion parallel Christian responses to modern science. But there are differences as well. Where supernatural and metaphysical claims about the nature of reality are concerned, Islam and Christianity are very similar, and they face a similar challenge from the naturalistic tendency of modern science. Yet Islam and Christianity are different enough in their history and theological emphases that comparing their responses to modern science can be very illuminating.

One clear difference today is that many forms of Christianity have gone much farther toward making peace with science. Such liberal religious currents are not unknown in the Muslim world, but they tend to be much less developed. It is an open question whether an accommodation with science analogous to that proposed by liberal Christianity will become more viable within Islam.

2 Resisting Evolution

Evolution is the most prominent flashpoint between modern science and conservative Abrahamic religions, therefore Muslim responses to evolution are particularly interesting. There are, naturally, a full range of options endorsed by Muslims, from more liberal statements of compatibility to complete rejection of evolution. Nevertheless, the more conservative views appear stronger. Anti-evolutionary views are widespread among Muslims and influential in educational environments. Among devout intellectuals, evolution typically prompts distrust, and many consider it obvious that nature is formed according to an explicit divine design.

Part of this resistance to evolution is motivated by scriptural concerns. Muslims may not always agree on how to interpret their sacred writings, but they enjoy a remarkable consensus on the Quran being a completely divine text that is free from any human influence. This does not always lead to naive literalism—as in the Christian case, widespread literalism is a modern, populist tendency—but most often Muslim scholars take Quranic pronouncements at face value. The Quran lacks the kind of detailed creation story that opens the book of Genesis, but it mentions a creation in 6 days and alludes to a Genesis-like story. When mentioning human origins, the Quran is slightly more specific, stating that

humans were specially created out of materials such as clay, and that everyone has descended from Adam and Eve. Due to the vague nature of Quranic allusions to divine creation, conservative Muslims do not need to adopt extravagant beliefs about geology and astrophysics that characterize the “young-earth” creationism popular among conservative Protestants. Muslims are usually not very interested in the age of the earth, and rarely insist that the universe was created in 6 days only a few thousand years ago (Edis 1994; for example, Bucaille 1979, pp. 133–149).

Muslims also do not have to deny that common descent accounts for much of the history of life. Many Muslim thinkers have come to endorse a limited version of evolution, particularly if major transitions are understood to be due to divine intervention, and humans are clearly set aside as a special creation. If there is a common theme in Muslim resistance to evolution, it is that devout thinkers reject the naturalistic, Darwinian view of evolution that dominates modern science. The notion that the history of life can be explained entirely through natural mechanisms is unacceptable. Professor Adem Tatlı, a prominent Turkish creationist, explains that “In the end, the theory of evolution states that all creatures come about through accidents without a prior plan or guidance, or that they originate by chance. Creationists state that everything from atoms to galaxies was created in a conscious, planned, wise, and purposeful fashion. This is the point where the theory of evolution conflicts with religions” (Tatlı 2005). Evolution is a problem not just because of traditional interpretations of a number of Quranic verses, or even conflicts with more developed doctrines. Devout Muslim thinkers perceive Darwinian evolution to be a theory that is embedded in a completely naturalistic description of the world. They oppose this naturalism, preferring a supernaturalistic picture where divine harmony and moral significance are visible in the everyday operations of nature.

It is not difficult to see why religious thinkers should be concerned about naturalistic tendencies in science. Naturalists, especially in their physicalist variety, think that combinations of physical laws and random events suffice to describe nature (Edis 2004; Melnyk 2003). Darwinian evolution is important for such naturalistic ambitions, since it explains complex organisms in physical terms. The intricate complexity of living things has always suggested that they have been designed for a purpose, and therefore life has historically been a prime example in arguments that a supernatural intelligence has designed our world. Philosophers such as David Hume criticized the traditional argument from design, but Darwinian evolution was a more decisive counterargument, as it provided a compelling naturalistic explanation of functional complexity (Rachels 1991). The Darwinian mechanism relies on accidents as a source of genetic novelty, and natural selection to favor those variants that enjoy an advantage in reproduction. And as such, Darwinian evolution does not merely make sense of patterns in evidence such as the fossil record, it also locates *creativity* within the world described by physicists. This is a significant challenge to traditional religious conceptions of nature. Moreover, natural science has continued to exploit Darwinian thinking beyond biology, especially within cognitive and brain science. Evolution has become an important component of scientific approaches to human culture, from explanations of morality to the culturally universal belief in supernatural agents (Bulbulia et al. 2008). Daniel Dennett (1995) calls Darwinian evolution a “universal acid” against supernatural beliefs. This is, by and large, an accurate description, and religious thinkers disturbed by the naturalistic drift of modern intellectual life have good reason to blame Darwinian evolution.

There are also practical reasons to target evolution above all. Many sciences, such as physics and cognitive neuroscience, continue to inspire skepticism about supernatural realities, but their contributions come as part of complex, often technical arguments that

have little effect beyond an academic subculture. Evolution provides a much more direct challenge to traditional beliefs about scripture, humanity's place in nature, and divine creativity. Islam, like the other Abrahamic religions, has been most comfortable conceiving of humans as a special creation halfway between the beasts and the angels. It is easy to see the difficulty of reconciling evolution with such a traditional picture of nature.

Muslim thinking about evolution is further influenced by the centuries-long struggle of Muslim countries to adopt superior Western technologies. Modernizing Muslim intellectuals have long aspired to assimilate technical knowledge while guarding against secularizing cultural influences. Since evolution has been entangled in religious controversy from its beginning, and since the Darwinian view of evolution has provided scientific support for an ongoing secularization of modern intellectual culture, this is further reason for devout Muslim intellectuals to be suspicious of evolution. Muslim thinkers are typically very aware of, even enthusiastic about, the benefits of Western technology. This technology, however, is linked to modern Western science and its ambitious conceptual schemes that suggest humans are part of an impersonal natural order. Muslims often criticize the secular West as a material success but spiritual failure. Evolution, in this context, symbolizes the godless path taken by secular science.

Many of these reasons for resisting evolution are shared with conservative Christianity and Judaism. So unsurprisingly, Muslim critics of evolution rely on arguments very similar to those used by Christians and Jews. There are, as can be expected, a wide variety of forms of resistance. Grassroots constituencies favor outright creationism. Their literature often attributes evolution to anti-God philosophies or conspiracies among scientists; literal-minded readings of the Quran and the authoritative traditions of mainstream Islam decisively rule out evolution. Conservative populism, however, can only go so far. Science, and forms of naturalism inspired by science, enjoys some influence in public intellectual debate. More important, modern-day educational establishments are committed to science, and even conservative Muslim constituencies favor technology and are anxious to catch up to technologically advanced countries. So there is also a need for a more intellectually sophisticated form of resistance. Many Muslim intellectuals would like to construct a culturally more authentic alternative to the naturalistic currents of thought inseparable from Western science. They desire a new, explicitly Muslim institutional structure for science, one which would restore God to the center of their conception of nature. So, just as in the West the Intelligent Design movement has developed an antievolutionary position with a more intellectual image, there are plenty of Muslim scholars and scientists who publicly reject Darwinian evolution.

There are also important differences between the forms of resistance inspired by different religions. In western Europe, antievolutionary activity is negligible except within small fundamentalist populations and immigrant Muslim communities (Kepel 1997; van Raaij 2005); where conservative Christianity is stronger, such as in Poland and in some Russian Orthodox circles, creationist sentiment is stronger. And naturally, the strongest variety of Christian creationism is found in the United States, where opinion polls find that about half of Americans are creationists and most of the rest accept only a non-Darwinian, guided form of evolution. But whatever the level of popular resistance to evolution, creationism has become an intellectually marginal position in culturally Christian and post-Christian countries. The intellectual high culture in the Western world does not challenge evolution. Creationists and intelligent design proponents are self-conscious as outsiders who attempt to restore an outlook that has been rejected by intellectual elites and educational establishments. Muslim creationists, however, can count not just on popular support but a significant degree of acceptance in their intellectual cultures.

Popular resistance to evolution is not in doubt. Evolution has not penetrated much into Muslim environments, and where it has, we also find the world's most successful creationist enterprises. For example, a 2005 survey examined the numbers of adults who accepted evolution in 34 countries. Thirty one were in Europe, together with Japan, the United States, and Turkey. Turkey was the sole Muslim representative, but also a country known for its Western orientation and secular political tradition. Around 60% of most European populations favored evolution, and 25% rejected it. The notoriously religious Americans came thirty-third on the list, but Turkey was in last place, with 25% favorable toward evolution while more than half of Turks opposed it (Miller et al. 2006). But again, there is more to Muslim creationism than grassroots support. Muslim critics of evolution do not go against a strong consensus of their intellectual high culture. A little-doubted sense that nature is a divine design remains the common intellectual background. Darwinian evolution is a Western import, defended by westernizing elites within Muslim societies. Antievolutionary views, in contrast to Western forms of creationism, are devoted not to reversing a defeat but to defending a strong and authentic local point of view. Muslim creationists are closer to being intellectual insiders than marginalized outsiders.

3 Creationism in Turkey

The late nineteenth century European debate over evolution that followed the publication of *The Origin of Species* found echoes in the Muslim world. Some reform-minded and Western-educated intellectuals in decaying states such as the Ottoman Empire thought westernization was the only possible way forward. When evolution became a subject of controversy in Europe, this also attracted the attention of westernizing elites, since science was clearly one of the keys to Western success. Making sense of biology or the fossil record was not the foremost concern of such elites; the philosophical and theological debate over evolution seemed more important. For some of the most extreme westernizers, evolution confirmed nineteenth century materialist philosophy and highlighted how clerical obscurantism stood in the way of social progress. Both among Arabs and Turks in the Ottoman Empire, a handful of intellectuals became known for their embrace of evolution (Özervarlı 2003; Ziadat 1986).

Most Muslims, and even most modern-oriented Muslims, however, were much more cautious. The implicit materialism of Darwinian theory was one immediate obstacle. And in a climate where importing technology, while preserving the essentials of Muslim culture, were overriding concerns, the fact that Darwin's most enthusiastic defenders flirted with culturally revolutionary ideas did not help the reception of evolution. Moderate westernizers wanted instead to borrow Western science but make it Muslim by purifying it of materialist ideas. More traditional Muslim scholars condemned evolutionary thinking as impiety, but modernist, reforming Islamic thinkers also found evolution to be unacceptable. Jamal al-Din Afghani, one of the leading figures in early Islamic modernism, had nothing but praise for science, and using European science to revive Islamic intellectual life was an important theme in his proposals for reform in Muslim lands. Nevertheless, he attacked evolution as an absurdity that was unacceptable to Muslims (Keddie 1968, pp. 130–174).

As a result, Darwinian ideas did not penetrate into Muslim lands. A small segment of an elite showed enthusiasm, but otherwise evolution was either unknown or superficially described only to be denounced. With limited discussion and public knowledge of evolution, a fully worked-out creationist opposition to Darwin also did not develop. Even

among the educated minority of Muslim populations, few had any serious knowledge of evolutionary biology. The vast majority, intellectuals included, maintained a naively creationist perception of life.

Nonetheless, some radical modernizers continued to be interested in evolution. For example, Mustafa Kemal Atatürk, founder and first president of the Turkish Republic, was very interested in Darwin's theory when he was a student in the Ottoman War Academy (Kazdağlı 2001, p. 17). The secular westernizers who came to lead Turkey in the 1920s made sure that the modern education system that they implemented included instruction in natural science, together with topics such as evolution. This did not produce a notable creationist reaction, as the newly secularized education system included more serious insults to traditional religion than the material in biology textbooks. Therefore the secularist embrace of Darwin did not lead to public opposition to evolution, since evolution remained only a minor point of friction among much more direct challenges to the traditional social role of religion. Underground religious movements rejected Darwinian thinking, and religious publications included occasional anti-evolutionary statements. But for the most part, people passively resisting official secularism extended their distrust to evolution without singling Darwin out for special criticism.

In the 1970s, evolution started to generate more controversy. The creationist literature of this decade continued to denounce evolution as going against religion and true science alike. They included some typical creationist claims, such as the notion that the extreme improbability of protein formation by pure chance demonstrated that evolution was impossible (Akbulut 1980). The more notable development came when an Islamist party became a junior coalition partner in some governments. Some Islamist members of parliament objected to evolution in textbooks (Atay 2004, pp. 136–137). They were not successful, but religious conservatives were clearly becoming more vocal about their discomfort with evolution. Attacking evolution may have been an indirect way to confront official secularism.

Turkish creationists found success in the mid-1980s, after the civil strife in the late 1970s led to a military takeover (Edis 1994). Though the generals cited Islamist extremism among the reasons for their coup, they considered the political left to be a more serious threat. So they put more emphasis on Islam as a force that might promote national unity. For example, they imposed a new constitution that reaffirmed secular government but also included features such as mandatory religious instruction in schools. In practice, this almost always meant a class in orthodox Sunni Islam.

The dictatorship promoted conservative educational and cultural policies. A 1983 report of the State Planning Organization endorsed the idea of a “Turkish-Islamic Synthesis” as a national cultural policy. The planning report attacked Darwin as an apostle of materialism: “Prominent among naturalist views that reduce humans to nature, count them as part of it, and deny human spiritual superiorities that do not exist in nature and cannot be derived from nature, is Darwin [sic.]. This biological hypothesis has declared humans to be of monkey origin, and asserted that the mechanistic workings of nature are completed with the last stage of evolution progressing from monkey to human” (quoted in Timuroğlu 1991, pp. 82–83).

The generals soon handed power over to a conservative government that continued similar cultural and educational policies. Religious conservatives took control of the Ministry of Education. As a result, creationism received official endorsement for the first time. To bring about this change, Muslim conservatives sought inspiration from “scientific creationists” among American Protestants. The December 1992 issue of *Acts and Facts*, a publication of the Institute for Creation Research (ICR), described the events as:

“Sometime in the mid 1980s, the Turkish Minister of Education, Mr. Vehbi Dinçerler . . . placed a call to ICR. . . . [H]e wanted to eliminate the secular-based, evolution-only teaching dominant in their schools and replace it with a curriculum teaching the two models[.] As a result, several ICR books which dealt with the *scientific* (not Biblical) evidence for creation were translated into Turkish and distributed to all Turkey’s public school teachers.”

Minister Dinçerler also enlisted Adem Tatlı, a university professor and creationist, asking him to prepare a report on evolution and education. Tatlı recalls commenting, “Darwinism, along with Marxism and Freudism, constitutes the basis of materialist philosophy. Your opposition to evolution theory may, I fear, lose you your position.” The Minister replied: “I feel the spiritual responsibility of 15 million children of the nation on my shoulders. The faith of our youth is shaken by the one-sided presentation of such a theory. For the truth of this matter to be understood and be set in its proper course, let not only one, but a thousand Vehbi positions be sacrificed.” Tatlı’s report describes evolution as “a theory that has not been able to become a law for 120 years,” and recommends “inclusion in the curriculum of the shortcomings of this theory and opposing opinions” (Tatlı 1990). Tatlı relies on American creationist literature; he often cites leaders of ICR, presenting them as Western scientists who have come to understand the scientific failure of evolutionary theory.

Tatlı’s report would come to reflect and inspire official policy in Turkey. The Ministry of Education translated American creationist books and distributed them to teachers free of charge. Creationism appeared in high school biology textbooks, some of which presented evolution as a clearly mistaken idea, concluding that the universe and all forms of life were specially created (Günbulut 1996, p. 268). Since then, religious conservatives have been in and out of power. How evolution appears in Turkish textbooks depends largely on who controls the Ministry of Education at the time.

4 Varieties of Creationism

In the 1990s, Turkish creationism flourished. Islamist intellectuals regularly attacked evolution, calling it a materialist myth that corroded morality and religion. In Turkish academic circles, a number of conservative religious scientists argued for an “alternative biology” that emphasized traditional Islamic perceptions of divine design in nature (e.g., Yılmaz and Uzunoğlu 1995). But the most important development started in 1998, when Turkish creationism became a modern, media-driven, popular pseudoscience. Indeed, Turkey became the center for an aggressive Islamic creationism with international influence.

The new Turkish creationism is driven by the output of “Harun Yahya,” a pseudonym that has become the brand name for the best known form of Islamic creationism (Edis 1999; Edis 2003). Harun Yahya creationism is notable for its distinctly modern flavor. In Turkey, the Yahya literature and associated organizations such as the “Science Research Foundation” support Turkish nationalism, without exhibiting the common conservative religious hostility toward the secular Turkish state. They do not insist on traditional cultural symbols such as Islamic dress, conspicuously endorsing modern clothing and lifestyles. They present an image of modern, technologically sophisticated people who enjoy success in a global capitalist economy. They implicitly claim to have reconciled science and religion, and found a way to affirm traditional spirituality while enjoying the benefits of modern life.

The novelty of Harun Yahya's brand of creationism is the well-funded, entrepreneurial, media-savvy nature of the enterprise. In contrast, there is very little new about the content of this creationism. As detailed in an endless stream of publications under the Yahya brand, Yahya's creationism is a grab-bag of traditional Islamic objections to independent creativity within nature, arguments taken from Christian creationists and intelligent design proponents, and opportunistic borrowings from Western writers who proclaim signs of God revealed by modern science. Yahya brings up common creationist themes, stating that transitional fossils do not exist, that intermediate forms are impossible anyway, that the alleged evidence supporting evolution is fraudulent, that physical cosmology has discovered that the universe is a divine design, and that evolution at the molecular level is statistically impossible. Yahya also explains why Western scientists and Turkish fellow-travelers say that evolution is correct, since it is so obviously false. Like many Christian creationists, Yahya thinks that scientists have been ensnared by materialist, anti-religious philosophies that have nothing to do with true science (Yahya 1997).

The Yahya material appeals to a global, modern audience. It is marketed to people who depend on science and technology in their lives, but understand science as little more than an isolated collection of facts. The Yahya material, as with most other forms of Islamic-flavored pseudoscience, mainly supplies the "facts" that confirm already existing religious beliefs.

Harun Yahya is an example of a crude, popular way of opposing evolution. None of the work produced under the Harun Yahya label is intellectually serious. Creationists in Turkey have little difficulty finding academic voices to support them, but much of this is due to a desire to combat a common enemy in secularism or materialism.

Still, there is no shortage of Islamic varieties of creationism expressed in a more intellectual idiom. Many respected academic thinkers adopt versions of creationism grounded in traditional Muslim theology. For example, philosopher of science Osman Bakar, who has held prestigious academic appointments in both his native Malaysia and the United States, attacks evolution as a materialist philosophy that attempts to deny nature's manifest dependence on its creator (Bakar 1987; Bakar 2003). Seyyed Hossein Nasr, a leading scholar of Islam who has long been based in American universities (currently at George Washington University), argues that Darwinian evolution is logically absurd, and that it conflicts with the hierarchical view of reality presented by all genuine religious traditions. Both Bakar and Nasr rely on many classic creationist arguments, some which would not be out of place in Yahya's writings. Nasr argues that mathematics and information theory preclude evolution: "One cannot study the cell as it is done today, accept information theory and at the same time accept the current interpretations of the theory of evolution according to which, through temporal processes and without an external cause, which itself must be of a higher order in the sense of being able to increase the information contained within a gene, the amount of information contained within the genes does increase and they "evolve" into higher forms."

Nasr also says that life opposes the second law of thermodynamics, which means that "inert matter evolving into life forms" is impossible. He states that "the paleontological record hardly supports the evolutionary hypothesis no matter how far it is stretched and how far-fetched is its interpretation," that the Cambrian explosion is inexplicable by evolution, that mutations can only lead to very limited change, and so on (Nasr 1987, pp. 237–239). Nasr's citations for such claims include works by Christian creationists associated with the Institute for Creation Research. In a Muslim context, such denunciations of evolution are not considered disreputable. Indeed, Nasr's views do not just appear in

popular texts intended for a conservative Muslim market, but in academic books in religious studies put out by university presses.

Thinkers such as Bakar and Nasr, however, are not primarily concerned with listing what they think are mistakes in evolutionary theory. They are more interested in constructing an alternative view of science. They want a philosophy of science that is grounded in classical Muslim conceptions of reality. Bakar supports efforts to develop an “Islamic science” that would incorporate a traditional Muslim perspective into its study of nature (Bakar 1999). Nasr hopes for a revival of the traditional Muslim religious sciences, including the more occult and metaphysical sciences, in order to reintroduce a sense of the sacred into modern science. He envisions lower levels of reality depending on higher, more spiritual levels, which leads to an alternative to evolution:

Even today, certain scientists who realize the logical and even biological absurdity of the theory of evolution and some of its implications and presuppositions believe that the only other alternative is the *ex nihilo* doctrine, unaware that the traditional metaphysical doctrine interprets the *ex nihilo* statement as implying an elaboration of man’s being in divinis and through stages of being preceding his appearance on earth. This doctrine of man, based on his descent through various levels of existence above the corporeal, in fact presents a view of the appearance of man which is neither illogical nor at all in disagreement with any scientific facts—and of course not necessarily hypotheses and extrapolations—provided one accepts the hierarchy of existence, or the multiple levels of reality which surround the corporeal state. . . . [T]he whole modern evolutionary theory is a desperate attempt to substitute a set of horizontal, material causes in a unidimensional world to explain effects whose causes belong to other levels of reality, to the vertical dimensions of existence. (Nasr 1987, pp. 169–170)

Such ideas may enjoy no scientific support, but they receive serious attention within Muslim intellectual culture. Western scientific practice is not affected by the metaphysical and theological doctrines expressed by Nasr or Bakar. But in the Muslim world, it is not as easy to ignore theology. In various forms, the idea of reviving and modernizing medieval Muslim views of knowledge is quite popular.

Though attractive, calls to rebuild science with Muslim foundations have not been entirely convincing. The main difficulty is that ideas such as those espoused by Bakar and Nasr do not make much contact with actual, productive science. Hence conservative Muslims continue to explore other ways to resist evolution. For example, the intelligent design (ID) movement that has recently been active in the United States has also attracted some Muslim attention. Intelligent design incorporates many intuitions about design and creation common to many religions. Seyyed Hossein Nasr claims that information cannot be created within nature, and insists that information and creativity are injected into the material world from higher levels of reality. These are among the main themes of intelligent design.

So far, Muslims have not been deeply involved with the US-based ID movement. One exception is a moderate Islamist Turkish journalist, Mustafa Akyol. Akyol has been promoting ID in Turkey, and has even been a pro-ID voice in American media. Since ID is often accused of being a repackaging of Christian creationism, ID proponents take pains to highlight how people from diverse religious backgrounds support ID. In 2005, Akyol testified in support of ID in hearings held by the Kansas State Board of Education.

ID is likely to have some influence on more sophisticated Muslim thinking about evolution, even though ID is almost universally rejected by the Western scientific

community. There is much common ground between Muslim opponents of evolution and Western thinkers promoting some version of intelligent design. Even ambitions to reconstruct science in order to restore God to the center of the way we understand nature can be found among both Muslims and Christians. Some Christian philosophers sympathetic to ID propose a “theistic science” that would counter the way mainstream science has veered toward naturalism by taking divine design to be a basic assumption (Moreland 1994; Plantinga 1991). Muslim hopes to Islamize science can also be taken in a more ecumenical direction.

Theologically conservative Muslims, including influential intellectuals, tend to oppose evolution, and often their opposition echoes varieties of creationism found in Christian countries such as the United States. But the way recent Islamic creationists have been borrowing from their Christian counterparts should not obscure the deeper resonance the notion of divine design has with common Muslim ways of thinking. Muslim high culture—the culture of devout scholars and public intellectuals—already assumed intelligent design was an obvious fact about nature, long before the American ID movement. Most devout Muslim thinkers take it to be self-evident that life forms and nature are a product of design, that the cosmos is a divinely guided, harmonious place where Muslim metaphysics and morality is seamlessly joined with the orbits of the planets and the songs of the birds.

5 Partial Acceptance of Evolution

Creationism is the most straightforward way of preserving traditional Muslim perceptions of nature. Opposing evolution, however, invites a direct conflict with modern science. Since science and technology enjoy considerable prestige, many Muslims are also motivated to look for some accommodation between evolution and their interpretation of Islam. Some theologians look to verses such as 24:45, “And God created all animals from water: some of them travel on their bellies, some travel on two legs, some travel on four. God creates what God will; God is capable of all things,” and announce that this sounds much like the scientific story of life originating in the oceans. It might even hint at gradual evolution.

Strict creationists object to such overly imaginative and compromising interpretations. Harun Yahya insists that Islam cannot allow evolution (Yahya 2003). Seyyed Hossein Nasr also disagrees: “The evolutionary thesis has also penetrated into the Islamic world through the writings of many of the modernists who picked up the idea either in its scientific or philosophical sense. They then tried to extend the meaning of certain verses of the Quran to include the idea of evolution, although the Quran, like other sacred scriptures, states clearly that the world and all creatures were created by Allah and that the origin of man is not some prehistoric animal but the divinely created primordial man who in the Islamic tradition is called Adam” (Nasr 1994, pp. 185–186).

Theologians who accept a measure of evolution draw the ire of creationists. But such theologians do not defend Darwinian, naturalistic evolution as biologists understand it. They accept evolution in the sense of common descent (often with the exception of humans) but they think of evolution as a process under explicit divine guidance. This compromise view, guided evolution, still preserves the sense that nature is obviously a product of intelligent design.

Even very liberal-sounding theologians tend to be guarded toward Darwinian evolution. For example, The Turkish theologian Muhammet Altaytaş says that evolution does not conflict with Islam, “provided that this theory stays within scientific boundaries and is not

confused with metaphysics and does not present certain hypotheses as ‘scientific facts’—for example, the claim that “everything exists through chance and without purpose” (Altaytaş 2001, p. 82). This sounds reasonable, but since Darwinian evolution explains life and complexity without invoking any external purpose, it is hard to see more than a lukewarm acceptance of common descent in such pronouncements.

In any event, guided evolution may be an improvement over creationism, but it cannot satisfy the scientific community. Such non-Darwinian conceptions of evolution no longer have any currency in science. After the mid-twentieth century, biology did not refer to any purposive or intrinsically progressive forces (Provine 1988). Modern science describes the history of life and complexity in terms of physical mechanisms combining chance and necessity.

The idea of guided evolution does, however, have a significant political virtue: it helps dampen cultural and institutional conflicts between science and religion. If divine guidance can be interpreted as a metaphysical gloss that does not interfere with the study of nature, it will allow biologists to remain religious while preventing any overt supernatural influence on the objects of their research. In turn, liberal religious thinkers can say that the way that life forms changed over time does not conflict with their faith. So guided evolution is attractive to liberal Muslims, even though, as Nasr points out, mismatches with traditional interpretations of the Quran remain a real concern. It might be possible to reinterpret scripture to make it conform to modern knowledge, but Muslims typically see this as bowdlerizing their religion.

Guided evolution is not the only non-creationist option in Muslim countries. Some constituencies support Darwinian evolution, most obviously, academic biologists and secularists. Both of these are Western-influenced minorities. In Turkey, some secular scientists and intellectuals have commented on creationism and on writers such as Harun Yahya. They have not been effective, only deploring the popularity of creationism and denouncing it as an aspect of Islamist politics. Secularist critics of creationism insist that there is no conflict between a properly understood Islam and evolution, but in doing so, they require Islam to become a privatized, individual faith similar to liberal Protestantism. Removing religious faith from the public realm, including scientific investigation, would prevent conflict between science and religion. Such strict secularism is not, however, politically popular. Defending evolution by associating it with secularism is not likely to be very successful.

Scientists in Muslim countries are relatively weak and disorganized compared to the Western scientific community. In Turkey, where organized creationism is most active, scientists have little time and few resources for a political fight against creationism. Moreover, there is plenty of creationism within Turkish universities, including among science faculty. This is not unusual in the Muslim world. A survey comparing biology faculty from Lebanon with Australian biologists, for example, finds very significant skepticism about evolution (Vlaardingerbroek and El-Masri 2006).

Throughout most of the Muslim world, the life sciences typically focus on biomedical applications. This causes a further lack of emphasis on evolution in biology education. Indeed, most Muslim countries emphasize the applied sciences, so that engineering is a much more prestigious area of study than the natural sciences. Therefore the culture of applied science affects the perception of evolution in Muslim universities. Applied scientists tend to downplay the theoretical frameworks vital to basic science, and they typically are more religious than researchers in basic science. For example, a 2005 poll of American medical doctors, conducted by the Louis Finkelstein Institute for Social and

Religious Research, found that 34% agreed more with intelligent design than with evolution. For the Muslim physicians in the sample this number rose to 73%.

The result is that Muslim academics only lend weak support to evolution, whether as scientists or more liberal-minded theologians who accept guided evolution. Indeed, resistance to evolution is easy to encounter within academic circles as well as within populist religious movements.

6 Created Nature

Muslim opponents of evolution continually write about the dangers of materialism. They do this even though materialists—or scientific naturalists, or physicalists—are rare in the Muslim world. Conservative Muslims have faced off against westernizers and secularists for a long time, but few westernizers have ever rejected all supernatural claims. Until recently, Marxist materialism could have been a political option, but Marxism has faded away. Many Marxists have converted to political Islam. But it is today, when nearly everyone claims to be a good Muslim in their own fashion, that creationism has become most visible.

Creationists still perceive plenty of materialism to oppose. To believers, Islam is more than a set of religious practices. It is also a symbol of all that is good. Anything that goes wrong, especially modern problems such as crime or sexual laxity, must be due to deviations from Islam. There are problems, problems are caused by impiety, and the most extreme impiety is materialism. “Materialism” is largely a symbolic enemy that has little to do with scientists and philosophers who are skeptical about supernatural beliefs. Creationists call for a moral mobilization; they aim to protect the community of the faithful from spiritual corruption.

The moral thrust of creationism has much to do with the social circumstances of the creationist public. Creationists respect science, because technology is an important part of their lives. And creationists speak to a modern audience, not rural traditionalists. So they handle religiously uncomfortable aspects of modern science by declaring that “true science” actually supports their views—they put their trust in an alternative “creation science.” Muslim creationism flourishes in a social environment very similar to that which sustains creationism in the United States (Eve and Harrold 1991).

Though creationism appeals to a modern constituency, traditionally Muslims primarily rely on sacred texts to validate their claims. Creationism sits in between, relying on both text-based and ostensibly scientific forms of legitimation. To bridge this gap, Muslims often use the notion of *fitra*, or created nature, a concept already familiar from Islamic theology. Everything in creation, especially human beings, are supposed to have an essential nature that determines their proper place and function. For example, the created nature of humans is such that we are all born as submitters to the One God and hence Muslims; only later social indoctrination turns people toward other religious paths. Western converts to Islam often call themselves “reverts,” since they have reverted to the natural state of humankind. In more mystical currents of Islam, *fitra* often refers to a primordial Platonic ideal of human perfection. Though it takes various forms, the idea of *fitra* always means that the created nature of humans is inscribed with specifically Muslim ideals. Religious scholars will typically say that cosmetic surgery is not permitted if it frivolously interferes with God’s creation, but it is permissible if it corrects a defect and thereby brings someone closer to the ideal of the *fitra*. Created nature embodies a moral ideal, and deviations from this ideal state are morally tainted. Even the imperfections of

human nature can tell us about this ideal. Unbridled male sexuality, for example, is a created weakness, but it can become a strength in its proper place, which is the Muslim family.

So a modern audience that respects science as well as scripture can use the concept of *fitra* to link the two approaches. *Fitra* comes to mean created nature as revealed by biology as well as religion (Edis and Bix 2005). Humans and all living things, after all, are supposed to be created by God, and they must have definite roles in the divine scheme of things.

Evolution, therefore, can threaten Muslim understandings of the nature of morality, since evolutionary theory emphasizes varying populations and does not allow for a fixed created nature. From a Darwinian evolutionary perspective, it is also hard to think of morally higher or lower states being reflected in biology. Muslim tradition conceives of nature hierarchically, and plants and animals are beings at a lower level. This means that when “humans, who have a rank in the order of reality that is not merely at the level of instinct, bring themselves down to such a level by their own hands, the result will be evil” (Aydın 2000, p. 118). It is morally disastrous to say that humans are a species of animal.

Therefore, like Christian and Jewish creationists, Muslims associate Darwinian evolution with social Darwinism, sexually “animalistic” behavior, family breakdown, and similar anxieties about modern life. Harun Yahya, for example, claims that belief in evolution is motivated by perverse ideologies, saying that “We can add [to racists, fascists, socialists, etc.] those homosexual ideologues who try to explain their sexual deviation by ‘a genetic variation produced by the process of evolution.’ These ‘scientific’ vanguards of the homosexual movement claim that homosexuality arose in a certain stage of the process of sexual evolution and contributed to the progress of this process. In doing so, they seek to legitimize their perversion” (Yahya 1997, p. 307).

Muslim creationism, then, was almost inevitable. The modern social environment no longer presents traditional social roles as just the unquestioned, natural order of things. So conservative Muslims need to reaffirm a view of the world in which traditional roles make sense. This need goes beyond creationism. Controversies about gender roles also produce examples of how morality and created nature is connected to biology in modern Muslim apologetics (Edis and Bix 2005). Modernization has meant greater public opportunities for women, and more pressure for women to join economic production. The status of women is always a flashpoint in the struggle between westernized and conservative Muslims; the dress of women is the most visible marker of difference between traditional and more secular people.

Conservative Muslims point to sacred texts endorsing a primarily domestic role for women. For example, in the Quran, 4:34 says “The men are supporters of the women, by what God has given one more than the other, and by what they provide from their property.” Commentators explain that husbands have to protect and provide for their wives because God has made men stronger than women and so responsible for their protection.

Referring to sacred texts, however, is not the only form of legitimization that is effective in a modern environment. Therefore some popular Muslim apologists try to persuade their audience by invoking science and created nature. An intriguing example comes from the writings of Süleyman Ateş, a leading Turkish theologian who has served as head of the national Directorate of Religious Affairs. In the 1990s, Ateş wrote a number of books defending the faith and justifying the traditional place of women. Addressing a modern audience, Ateş could not solely rely on sacred texts. Instead, he drew on a conception of created nature that incorporates ideas going back to ancient Greek philosophy. Defending 2:228, which says that “men have a rank above [women],” Ateş says that “as a whole, the

male sex has been created superior to the female. Even the sperm that carries the male sign is different from the female. The male-bearing sperm is more active, carrying light on its head, the female sperm is less active. The egg stays stationary, the sperm seeks her out, and endures a long and dangerous struggle in the process.” This echoes ancient medical notions about weaker, less perfect female seed. Ateş adds, “Generally in nature, all male animals are more complete, more superior compared to their females. For example, the cock compared to the hen, the ram to the ewe, the male lion to the lioness, is more beautiful and stronger,” (Ateş 1991, pp. 36–37) sounding much like an Aristotelian natural historian.

Since the Greek philosophical tradition has had considerable influence on the training of traditional religious scholars, some Muslim feminists blame Hellenistic philosophy for what they claim are distorted, anti-woman interpretations of the sacred sources (e.g. Seif-Amirhosseini 1999). More feminist interpretations, however, show little sign of catching on, though they draw academic interest among scholars attracted by their rhetoric of liberation (for a critique, see Moghissi 1999). As Serpil Üşür puts it, classical Islamic civilization saw social roles in created nature; “within the ideology of Islam, . . . the sexual division of labor becomes a fundamental principle, a divine and eternal natural law determined by God when creating the sexes” (Üşür 1992, p. 135). Today, popular Muslim understandings of science, particularly biology, operate in a similar context. Naturalistic tendencies within modern science are threatening, not only because they clash with a traditional understanding of scripture, but because they threaten a deep-seated Muslim perception of a divine and moral order visible in nature.

7 An Illusion of Harmony

Rampant pseudoscience and popular apologetics based on opportunistic abuse of science are very easy to find in the Muslim world today. Such Muslim distortions of science are similar to views current among conservative Christians. US Congressional Representative Marilyn Musgrave declares, in a speech against gay marriage, that “our rights exist within the context of God’s created order. The self-evident differences and complementary design of men and women are part of that created order” (quoted in Hamilton 2005, p. 52). A majority of devout Muslims would probably agree, sharing a similar understanding of the “created order”.

Conservative Christian notions of created nature, however, are not as well developed, and have limited appeal outside a fundamentalist subculture. In contrast, many Muslim thinkers who enjoy a broad influence are committed to strongly non-Darwinian views and insist that Muslim morality is reflected in created nature. The divine creation must be harmonious at all levels: scripture, nature as revealed by science, and Muslim metaphysical thinking must all smoothly fit together in a God-centered picture of reality. Going beyond popular pseudoscience, the more sophisticated versions of creationism try to make this underlying harmony clear. Conservative Christians also believe that nature and scripture must be in harmony, but their views about created nature lack the depth of the Muslim concept.

Leading Muslim thinkers take harmony for granted. For example, consider Said Nursi, one of the leading Muslim thinkers of the twentieth century, notable for his efforts to modernize theology and resist secularism. Nursi inspired the powerful “Nur movement” in Turkey, which, while being enthusiastic in its support for technology and capitalism, is also a driving force behind much Turkish pseudoscience. In his writings, Nursi continually speaks of harmonious relationships within the universe and between the universe and

humans, who are the crown of creation and the center of the universe. So harmonious is the universe that “in no way could confused chance, blind force, aimless, anarchic, unconscious nature interfere in that wise, percipient particular balance and most sensitive order. If they had interfered, some traces of confusion would certainly be apparent. Whereas no disorder is to be seen anywhere” (quoted in Vahide 2003, p. 17). To Nursi, as with most devout Muslim intellectuals, order and purpose are clearly visible in nature. Nursi emphasizes this perception of harmony, saying that the visible divine order in nature is a better reminder of the Creator than all the demonstrations of philosophical theology.

Throughout the world, attempts to Islamize knowledge and revitalize Muslim culture continue to draw on concepts of harmony rooted in the classical Muslim perception of reality. They often take an organic view of nature. As the International Institute of Islamic Thought puts it:

All things in creation serve a purpose and all purposes are interrelated, as a means and an end to one another. This makes the world one telic system, vibrant and alive, full of meaning. The birds in the sky, the stars in the firmament, the fishes in the depths of the ocean, the plants and the elements—all constitute integral parts of the system. No part of it is inert or evil, since every being has a function and a role in the life of the whole. Together, they make an organic body whose members and organs are interrelated. (AbuSulayman 1989, p. 37)

Sayyid Qutb, a leading Islamist theorist, also describes the universe as an organic unity characterized by harmony and balance, where Islamic law is analogous to physical laws in being part of the universal divine law structuring all reality (Euben 1999, p. 76).

Muslim thinkers tend to say that harmony, as with all important theological ideas, is directly derived from the Quran and other sacred texts. This overlooks the range of possibilities in interpreting religious writings. After all, the Quran is a disorganized book with ambiguous meanings; different interpreters will emphasize or downplay different parts. Mainstream Muslim tradition, however, has emphasized plain readings that support a purposeful, harmonious nature immediately created by God. The intellectual high culture of Islamic civilization has done the same. Early Muslim philosophers adopted “proofs” of God from Greek and Christian philosophy. Compared to the more abstruse metaphysical proofs, however, the argument from design ended up with the most influence. The harmony of our complex world pointed to a purposeful design by God. In today’s circumstances, where Muslims grant science considerable cognitive authority, the design argument becomes even more prominent. Popular apologetics and devout intellectual productions alike try to reinforce the traditional perception of design and harmony in nature.

The theories of modern science, and particularly Darwinian evolution, disrupt the picture of harmony. Evolutionary biology makes it more difficult to seek sharp boundaries in life that carry moral meaning. There are many human differences rooted in biology, but these are never separate from culture and environment, and they do not have any obvious transcendent purpose or moral implication. Moreover, biotechnology promises even greater fluidity. Using technologies such as the birth control pill, we can modify human biology or its consequences. Furthermore, evolutionary explanations of human behavior portray moral and spiritual beliefs as emerging within nature, rather than being handed down from above (Bulbulia et al. 2008). All in all, trends in evolutionary science make it increasingly difficult to reconcile natural science and the Muslim conception of a harmonious, morality-infused nature.

So many devout Muslims perceive a moral void in Western science. They ask what Islam might contribute to a scientific understanding of our world, and their answers

invariably involve morality and spirituality. They say that a science illuminated by Islam would be conscious of moral imperatives; it would not destroy the environment; it would not produce technologies of oppression and alienation; it would understand the biology of the sexes in a framework of dignity and respect for complementarity; it would, most radically, oppose the myth that science is value-free (Sardar 1984). And an Islamic approach to science would accomplish all this because it would recognize the divine truth at the center of all the partial truths gathered by science.

Some Muslim thinkers claim that all that is true in science was already anticipated by the Quran, that Islam is literally a scientific religion. Some state that assimilating science to Islam requires more; at the least, Muslims need to replace unacceptable theories such as Darwinian evolution. Others insist that an Islamic science is a moral science, and that Muslims must practice science differently. But the most ambitious thinkers want a stronger Islamic response to science. Muslims must go beyond resisting materialist theories in natural science and immoral uses of technology. This is vital but not enough; Muslims must also respond at the level of basic metaphysical assumptions. They must reconstruct science around an Islamic vision. They must constrain science by the higher truths of revelation. At the very least, they must excise the materialist philosophy that appears in the guise of scientific fact.

Osman Bakar, for example, tries to sketch an Islamic approach that is distinctly different than secular modern science. Islamic science is supposed to be based upon a different philosophy of science, it should therefore rely upon different methods. Contemporary naturalism presents a bottom-up view of the world, where complex processes such as those that make up life are assembled out of simpler physical events. Bakar inverts this bottom-up approach and proposes to restore the top-down view of the world favored by religious traditions:

There is an hierarchy of universality of laws of creation corresponding to the hierarchy of the created order. For example, biological laws are more fundamental and universal than physical or chemical laws since the former laws concern the biological domain which possesses a higher ontological reality than the physical domain which gives rise to the latter kind of laws. But the biological laws themselves are subject to a higher set of cosmic laws which are spiritual in nature. If the attempt to unify all the known existing laws in physics and biology is progressively pursued and in an objective manner, then a point is reached whereby the higher, nonphysical orders of reality would have to be seriously considered and examined. (Bakar 1999, p. 72)

Proposals to Islamize science are always very ambitious, starting with sweeping metaphysical statements and proceeding to plans to reconstruct science in a way that removes offenses to traditional Islamic beliefs. But such ambitions strongly contrast with the complete lack of actual scientific productivity that results from these endeavors.

And without new and interesting scientific results, proposals to Islamize science remain a form of cultural defense rather than a serious alternative to mainstream ways of doing science. After all, Muslims feel pressure to adopt science because of its real-world success. Ideas to improve science by making it recognize morality or higher levels of being are easy to come by, but none of these lead to any concrete reason that would help overturn the naturalism that so bothers Muslim sensibilities. So the most radical Muslim thinkers about science also exhibit a curious lack of imagination. All they produce are variations on a theme of reviving the classical Islamic view of knowledge, of restoring obvious harmony to the universe. That is a dead end, as are postmodern complaints about science not being value-free. It is unfortunate that Western physicists are so intimately involved with

weapons research, but their bombs really do work. Science needs institutional values that promote learning about the world, but moral constraints on the scientific enterprise are up to social negotiations, not anything intrinsic to science as a form of inquiry.

8 Conclusion

Too much Muslim thinking about natural science continues to be caught between irrelevance and falsehood. Some Muslims add “because God wills it” to naturalistic accounts, to remind themselves that natural patterns only exist at the sufferance of the divine will. Even if this is an irrelevant metaphysical gloss, it impedes communication with non-Muslim scientists, and no attempt to give it real content seems promising. Many Muslims oppose Darwinian evolution, and in doing so they routinely misdescribe the world. And if they try to follow those Christian liberals who say God is invisibly present behind the scientific account of events, they again end up with an irrelevant gloss, with mere hand-waving. The problem is that nothing Muslims have done so far has responded to the main challenge that modern science has posed for theistic religions: the growing sense that God has become optional, that it is a metaphysical ghost that is best removed from descriptions of the universe (Edis 2002).

Conservative Christians have long faced a similar challenge, with many traditional Christian doctrines coming to seem irrelevant or likely false within the picture of the world drawn by the sciences. In the Christian and post-Christian world, there have been many responses to such challenges, including efforts to abstract philosophical principles from the successful practices of modern science and apply them to the question of what science may say about various worldviews (e.g. Gauch and other contributors to this volume). Such efforts tend not to convince too many parties in the debate between science and religion. The concrete achievements of science are the most difficult to deny. In that case, a broad consensus of various sciences in describing the world, when achieved, might carry more weight than more philosophical approaches.

Muslims also do not want to have their beliefs marginalized by such a well-respected institution as modern science. But the science and religion debate is different in a Muslim context. Technological prowess is as compelling to Muslims as anyone else. But arguments derived from a more Western philosophical tradition, influenced by Christian theology, are bound to be even less convincing to Muslims. At present, liberal, compatibilist theological options are noticeably weaker among Muslims. In both research and education, we should not expect Muslim cultural responses, to challenges based on science, to follow the more familiar Western patterns.

References

- AbuSulayman A (ed) (1989) Islamization of knowledge: general principles and work plan, 2nd edn. International Institute of Islamic Thought, Herndon
- Akbulut Ş (1980) Darwin ve Evrim Teorisi. Yeni Asya Yayınları, İstanbul
- Altaytaş M (2001) Hangi Din? Eylül Yayınları, İstanbul
- Atay T (2004) Din Hayattan Çıkar: Antropolojik Denemeler. İletişim Yayınları, İstanbul
- Ateş S (1991) Gerçek Din Bu (Volume 1). Yeni Ufuklar Neşriyat, İstanbul
- Aydın MS (2000) İslâmın Evrenselliği. Ufuk Kitapları, İstanbul
- Bakar O (1987) Critique of evolutionary theory: a collection of essays. The Islamic Academy of Science, Kuala Lumpur
- Bakar O (1999) The history and philosophy of Islamic science. The Islamic Texts Society, Cambridge

- Bakar O (2003) The nature and extent of criticism of evolutionary theory. In: Zarandi MM (ed) *Science and the myth of progress*. World Wisdom, Bloomington
- Bucaille M (1979) *The Bible, The Qur'an and Science*. American Trust Publications, Indianapolis
- Bulbulia J et al (eds) (2008) *The evolution of religion: studies, theories and critiques*. Collins Foundation Press, Santa Margarita
- Dennett DC (1995) *Darwin's dangerous idea: evolution and the meanings of life*. Simon and Schuster, New York
- Edis T (1994) Islamic creationism in Turkey. *Creation/Evolution* 34:1–12
- Edis T (1999) Cloning creationism in Turkey. *Rep Natl Cent Sci Educ* 19(6):30–35
- Edis T (2002) The ghost in the universe: god in light of modern science. Prometheus Books, Amherst
- Edis T (2003) Harun yahya and Islamic creationism. In: Chesworth A et al (eds) *Darwin day collection one*. Tangled Bank, Albuquerque
- Edis T (2004) Chance and necessity—and intelligent design? In: Young M, Edis T (eds) *Why intelligent design fails: a scientific critique of the new creationism*. Rutgers University Press, New Brunswick
- Edis T (2007) An illusion of harmony: science and religion in Islam. Prometheus Books, Amherst
- Edis T, Bix AS (2005) Biology and 'created nature': gender and the body in popular Islamic literature from modern Turkey and the West. *Arab Studies Journal* 12:2/13:1:140–158
- Euben RL (1999) *Enemy in the mirror Islamic fundamentalism and the limits of modern rationalism*. Princeton University Press, Princeton
- Eve RA, Harrold FB (1991) *The creationist movement in modern America*. Twayne, Boston
- Guessoum N (2008) The Qur'an, science, and the (related) contemporary Muslim discourse. *Zygon* 43(2):411–431
- Günbulut Ş (1996) *Ortadoğu Din Kültürü*. Kaynak Yayınları, İstanbul
- Hamilton MA (2005) *God vs. the gavel: religion and the rule of law*. Cambridge University Press, New York
- Hoodbhoy P (2007) Science and the Islamic world—the quest for rapprochement. *Phys Today* 60(8):49. doi: [10.1063/1.2774098](https://doi.org/10.1063/1.2774098)
- Kazdağlı G (2001) *Atatürk ve Bilim*. TÜBİTAK Yayınları, Ankara
- Keddie N (1968) *An Islamic response to imperialism: political and religious writings of Sayyid Jamal al-Din 'al-Afghani'*. University of California Press, Berkeley
- Kepel G (1997) *Allah in the West: Islamic movements in America and Europe*. Stanford University Press, Stanford
- Melnyk A (2003) *A physicalist manifesto: thoroughly modern materialism*. Cambridge University Press, New York
- Miller JD, Scott EC, Okamoto S (2006) Public acceptance of evolution. *Science* 313:765–766. doi: [10.1126/science.1126746](https://doi.org/10.1126/science.1126746)
- Moghissi H (1999) *Feminism and Islamic fundamentalism: the limits of postmodern analysis*. Zed Books, London
- Moreland JP (1994) Theistic science and methodological naturalism. In: Moreland JP (ed) *The creation hypothesis: scientific evidence for an intelligent designer*. InterVarsity Press, Downer's Grove
- Nasr SH (1987) *Knowledge and the sacred*. State University of New York Press, Albany
- Nasr SH (1994) *A young Muslim's guide to the modern world*, 2nd edn. KAZI Publications, Chicago
- Özervarlı MS (2003) Said Nursi's project of revitalizing contemporary Islamic thought. In: Abu-Rabi IM (ed) *Islam at the crossroads: on the life and thought of Bediuzzaman Said Nursi*. State University of New York Press, Albany
- Plantinga A (1991) When faith and reason clash: evolution and the Bible. *Christ Sch Rev* 21(1):8–32
- Provine WB (1988) Progress in evolution and meaning in life. In: Nitecki MH (ed) *Evolutionary progress*. The University of Chicago Press, Chicago
- Rachels J (1991) *Created from animals the moral implications of Darwinism*. Oxford University Press, Oxford
- Şahin A (2001) *İslam ve Sosyoloji Açısından İlim ve Din Bütünlüğü*. Bilge Yayıncılık, İstanbul
- Sardar Z (ed) (1984) *The touch of Midas: science, values and environment in Islam and the West*. Manchester University Press, Manchester
- Seif-Amirhosseini Z (1999) 'A change in the conception of Muslim women'. *Islam21* 20:15–18
- Tatlı A (1990) *Evrim İflas Eden Teori*. Bedir Yayınevi, İstanbul
- Tatlı A (2005) *Evrim Teorisi Nasıl Anlatılmalı*. Zafer 345 (September)
- Timuroğlu V (1991) *Türk-İslam Sentezi: 12 Eylül'ün Eğitim ve Kültür Politikası*. Başak Yayınları, Ankara
- Üşür S (1992) *İslamcı Kadınların Yaşam Alanı: Tepkisel İndirgemecilik mi?* In: Arat N (ed) *Türkiye'de Kadın Olgusu*. Say Yayınları, İstanbul

- Vahide Ş (2003) Toward an intellectual biography of Said Nursi. In: Abu-Rabi IM (ed) Islam at the crossroads: on the life and thought of Bediuzzaman Said Nursi. State University of New York Press, Albany
- van Raaij B (2005) Darwin is de profet niet. de Volksrant, April 9
- Vlaardingerbroek B, El-Masri YH (2006) The status of evolutionary theory in undergraduate biology programmes at Lebanese universities: a comparative study. Int J Educ Reform 15(2):150–163
- Yahya H (1997) Evrim Aldatmacası: Evrim Teorisi'nin Bilimsel Çöküşü ve Teorinin İdeolojik Arka Planı. Vural Yayıncılık, İstanbul
- Yahya H (2003) Why Darwinism is incompatible with the Qur'an. Global Publishing, İstanbul
- Yılmaz İ, Uzunoğlu S (1995) Alternatif Biyolojiye Doğru. TÖV, İzmir
- Ziadat AA (1986) Western science in the Arab world: the impact of Darwinism. McMillan, London

Author Biography

Taner Edis is an associate professor of physics at Truman State University, Kirksville, MO, USA. He was born and raised in Turkey, where he completed his first science degree, before moving to the USA where he received his PhD in physics from the Johns Hopkins University. He has written extensively on science and religion; his most recent book is *An Illusion of Harmony: Science and Religion in Islam* (Prometheus Books 2007).