Introduction: Muslims’ issues with Modern Science

Science, or Knowledge more generally, has always had a special status in the Islamic culture. As Abdus Salam, the Physics Nobel Prize winner, often reminded people, some 750 verses of the Qur'an describe the natural world, referring to the Creator and our existence; in contrast, less than 250 verses instruct Muslims about various actions in their lives. During its Golden Age, the Islamic civilization produced countless first-rate thinkers and researchers, leading to seminal scientific developments and contributions over many centuries. Muslims generally insist that no conflict arose then between Islamic theology and Science’s results or methodology.

This typical, widespread, and instinctive reaction, does not address modern science and the challenges it has brought to the Islamic and, more generally, theistic worldviews. Indeed, modern science imposed new principles (methodological naturalism, in particular) and brought about new theories (biological and human evolution, most notably), which the Muslim culture has found difficult to mesh with its traditional worldview.

Methodological naturalism is a general philosophical principle that modern science adopts, which stipulates that only natural causes can be admitted as explanations of natural phenomena, in other words that supernatural agents (demons, angels, spirits, or God’s direct intervention) must be left out of any explanatory hypothesis for a natural phenomenon. This is often coupled with Karl Popper’s principle of falsifiability, i.e. that any proposed explanation that does not present ways of getting checked cannot be considered as scientific. This has led some Muslim thinkers to regard modern science as essentially a “materialistic worldview”…

Indeed, a number of contemporary Muslim thinkers have formulated more or less full-fledged responses to modern science. The main ideas/schools can be succinctly presented as follows:

1. Sacred Science, Seyyed Hossein Nasr’s version of “Islamic Science”, represents his objection to modern science’s adoption of methodological naturalism, which he regards as a severance of science’s old link to the divine (Nasr, 1989, p. 132). Most notably, he denies any universality to modern science (Nasr & Iqbal, 2007, p. 181) Furthermore, Nasr asserts that modern science fragmented the integrated world-picture of the traditional worlds, debased humans and corrupted nature, which he sees as sacred in Islam, the cosmos being, according to him, a unified realm of material and spiritual beings (Kalin, 2001, p.454).

2. The “Islamization of Knowledge/Science” school which was launched (independently) by Ismail R. Al-Faruqi and Syed Muhammad Naguib al-Attas and carried forward (after Al-Faruqi’s death) by Taha J. Al-’Alwani (Al-’Alwani, 2004). This school purports to rewrite the whole human corpus of knowledge, including science and technology, in accordance with Islamic bases.
3. “Islamic” (Ethical) Science: Ziauddin Sardar and his now-defunct Ijmali school/group put strong emphasis on the ethical dimension that he/they saw as missing in Modern Science, hence rendering it unacceptable (Anees, 1984; Sardar, 1989, 2006). Most importantly, he/they put more importance in the social relevance of science than in its epistemological objectives. They insisted that Science be reconstructed – for all of humanity – along Islamic principles, such as: Tawheed (Divine Unity), Khilafa (human trusteeship of Earth), ‘Adl (Justice), Maslaha (Public Interest), etc.

4. Universal Science: Abdus Salam, the first Muslim Nobel Prize winner in Physics (1979), a devout and rationalist Muslim, with a few of his disciples, insisted that Science is universal, that it does not suffer from the “serious flaws” that Nasr, Al-Faruqi, Sardar, and others claim, and that it therefore requires no “Islamization”; only its interpretations and applications can be colored by culture (Abdus Salam, 1987, p. 201). As he simply put it, “There is only one universal Science; its problems and modalities are international and there is no such thing as Islamic Science just as there is no Hindu Science, no Jewish Science, no Confucian Science, no Christian science” (Hoodbhoy, 1991, p. ix).

From the brief review of the contemporary Muslim thinkers’ positions w.r.t. modern science that I presented above, the problem – and to some extent the solution – become readily apparent: on the epistemological level, modern science’s methodological naturalism poses difficulties to the traditional Islamic worldview, and on the praxis front modern science’s absence of strong ethical constraints fuels its opponents’ objections. On the other hand, the great successes of modern science in many fields (particularly physics, astronomy, and biology) leaves little choice to the (objective) reviewer but to take its results, and probably much of its methodology, solidly on board.

Rejections of major scientific theories, such as biological evolution and cosmology’s “big bang” (“theories” here being understood as major agreed-upon frameworks of laws and results that have established themselves), as strongly and openly expressed by Muslim thinkers such as Seyyed Hossein Nasr, are not a viable option. The evidence supporting those theories and many others in modern science is much too strong for any such rejection. Of course, any scientific theory remains open to modification and improvement, but the major results in those fields can only remain and be considered as established. No biological theory will be constructed in the future (even centuries from now) that overturns evolution. Likewise, the major elements of modern cosmology (size and age of the universe, its expansion, the interactions of matter and radiation, the evolution of elements and structures, etc.) will remain true, no matter what cosmological theory will dominate in the twenty-first century or in the thirtieth.

Consequently, the first reaction of Muslims w.r.t. modern science is to accept all its established results and general theories.

Once this is clear and settled, one can move on to the two issues that are open for review and interpretation, namely first the possibility of adopting a theistic framework or interpretation of the modern scientific enterprise, and secondly a strong affirmation of the ethical principles that must be adopted (or even imposed) to the practice of science, lest it lead to disasters such as those that we have already witnessed (nuclear bombs) or those that may very well occur in the future (e.g. genetic engineering with horrific consequences).
In formulating a general Islamic framework for dealing with modern scientific and technological developments and the ethical issues that often arise from them, one must first stress that the Qur’an is not a book of science; its objective was/is not to describe the world, nature, and the cosmos, but rather to guide humans to a balanced life (balancing the spiritual with the physical, the psychological, and the social dimensions of humans). There are, of course, hundreds of verses in the Holy Book, which point to nature and its phenomena, but the intention behind these verses goes beyond the descriptive to the meanings and the morals that are to be extracted from them. Furthermore, holy books are texts, and they are hence subject to interpretation; in contrast, science strives to reach objective results and descriptions of nature.

The second major critique that a number of Muslim thinkers have leveled at modern science is the absence of any strong ethical constraints in the scientific praxis. Following Sardar and the Ijmalis, I urge that stringent ethical standards, like those of Islam, be universally imposed on scientists and the whole scientific enterprise in order to prevent dangerous slips, such as I mentioned earlier. The Quran’s guidance and philosophy of knowledge can help in this regard.

The Importance of Life and Humans in the Universe

One of the most important discoveries of modern science (or at least modern physics and cosmology) is the fine-tuned and special disposition of our universe to complex life, intelligence, and consciousness. John Wheeler, the illustrious physicist, put it best: “A life-giving factor lies at the centre of the whole machinery and design of the world.”

Indeed, over the past half century, scientists have discovered that many features of our Universe are astoundingly fine-tuned to our existence, or to the emergence and evolution of life, more generally. Indeed, if the parameters that make up the physical cosmos had been drawn at random, the probability that they would have values allowing for life and intelligence to appear (at some point in time and space) would be ridiculously small, one in billions of billions…

Many thinkers have recognized this discovery as an extremely important one; it is often referred to as the anthropic principle, although to be more accurate, one should speak of the fine-tuning of the universe, from which an anthropic principle (the universe’s predisposition for life and the human species) can be inferred. Countless articles and books have written about this in recent times; a very clear and complete account of the topic was presented by Paul Davies, the well-known scientist-philosopher, in “The Goldilocks Enigma: Why is the universe just right for life?” (2006)

Now, the idea that the world is well designed and made adequate for humans is both old and ubiquitous among many cultures, including the Islamic one. This “design argument” did suffer serious blows in the wake of the Copernican and Darwinian revolutions, but contrary

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2 Paul Davies has published, among many other books, “The Cosmic Blueprint”, “Are We Alone?”, and “The Mind of God”; in 1995 he was awarded the Templeton Prize for Progress Toward Research or Discoveries about Spiritual Realities.
to the elites, laymen overwhelmingly continued to believe that humans are special and that Earth and perhaps the universe were designed (directly or indirectly) as cradles for humanity. And indeed, the discovery of the fine-tuning of the universe, brought back “man” to the center, so to speak. As Wheeler commented on that extraordinary and historic shift in view⁴: “Man? Pure biochemistry! Mind? Memory modelable by electronic circuitry! Meaning? Why ask after that puzzling and intangible commodity? [...] What is man that the universe should be mindful of him?”⁵ But a few lines further, Wheeler retorts: “No! The philosopher of old was right! Meaning is important, is even central. It is not only that man is adapted to the universe. The universe is adapted to man.” (Emphasis added.)

Indeed, after Copernicus revolution, which removed Earth and humans from the center of the universe and the formulation of the “principle of mediocrity” (that we must consider Earth and its inhabitants as nothing important at all in the cosmos), it came as a shock to the (western) elites to realize that the universe instead of being completely oblivious to humans, was in fact particularly suited for life, consciousness, and intelligence. Secondly, it was no longer a matter of seeing beauty and harmony in nature, nor even a set of smart observations such as the temperature, pressure, gravity, and environment of Earth being “just right”⁶ for our existence and activity; it was now a question of the very foundations of the universe, the parameters and physical laws upon which everything was built, all of which were found, time after time, case after case, to be finely tuned to the existence of life in general, and higher intelligence and consciousness as well.

This fits perfectly well with the Islamic worldview in general. Indeed, in addition to the argument from design that we find ubiquitous in the Islamic culture (that Allah has designed everything perfectly well and for good purpose), the idea of harmony between humans and nature can also be found, as Ibn Rushd for instance notes that: 1) all that exists is in harmony with humans; and 2) this can only be the result of an Agent who wanted it so. He gives examples of heavenly and earthly objects, with their most-appropriate characteristics.⁷

In the same line of thought, the contemporary Muslim philosopher Jaafar Sheikh Idrees sees in the harmony that exists between the many creatures of the world one argument for the existence of God. He adopts Al-Kindi’s and Ibn Rushd’s argument of providence or benevolence (dalîl al-`inayah)⁸. He supports his view with the following Qur’anic verses: “Have We not made the earth as a wide expanse? And (set) the mountains as pegs? And (have We not) created you in pairs? And made your sleep for rest? And made the night as a cloak? And made the day as a means of livelihood? And (have We not) built over you the seven

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⁴ Wheeler, op. cit.
⁵ Ibid.
⁶ Barrow and Tipler (op. cit., p. 143) make a special reference to the two seminal books by Lawrence J. Henderson (Harvard professor of biological chemistry), “The Fitness of the Environment” (1913) and “The Order of Nature” (1917); indeed, Henderson had noted the very special regulation of acidity and alkalinity in living organisms; CO2 dissolved in water is the regulator of neutrality, and water is absolutely unique as a regulator and conductor of heat (having a very large specific heat capacity and conductivity), in its surface tension, in dissolving other substances, and in many other properties.
strong (heavens)? And placed (therein) a shining lamp? And do We not send down from the clouds water in abundance, That We may bring forth therewith grain and plant, And gardens of luxurious growth?” (78:6-16) Idrees notes and stresses the finalist intentions in these verses, seen most clearly in the pronoun “That” (“That We may…”).

Modern astronomy has also provided evidence for the special characteristics that Earth displays: having an orbit around the Sun within the “Habitable Zone” (the region of space around a star where life can exist); having an inclined axis that allows seasons to occur and life to prosper through cycles; having a large Moon, which keeps Earth’s axial stable and helps life by raising Earth’s ocean tides, mixing nutrients from the land with the oceans, etc.; having a Sun with just the right size; etc.

Now, Muslims may insist that since humans were created to worship God, then nature is simply here to facilitate this (physically, emotionally, spiritually) by helping us at least to reflect upon it and perhaps come to know God through it. Muslims may then read these fine-tuned universe and anthropic principle developments and be tempted to see them as confirmation that we are “evidently” at the center of the universe, and perhaps the universe was indeed created for us. But one must always remember that the universe is much larger than our limited view and perspective, and the purpose of creation as a whole is a divine reason, which will remain largely outside of our understanding…

For a wider Islamic perspective on life, nature, and science

This brief review of modern science and its principles and the recent discovery of the fine-tuning of the universe and its extraordinary predisposition to life, intelligence, and consciousness may (at first sight) seem not very relevant (at least not directly) to the topic of ‘Islam and Biomedical Ethics’.

But the reason for this review is to help formulate what the CILE document calls “a holistic paradigm” that will (hopefully) allow Muslims to move beyond the “reactionary attitude” that has dominated the field of contemporary Islamic bioethics. Indeed, until we develop a philosophy of nature, life, the cosmos, and humans’ place and relation to it, we will keep on having to react to new developments that will challenge our limited traditional views; indeed, these traditional views were not built on a larger worldview that takes modern scientific discoveries and paradigms fully into consideration.

If we find difficulties and disagreements in discussing stem-cell research and its applications or genetically modified foods and organisms, how are we to handle much more challenging topics such as “synthetic life”9 (sometimes referred to as “artificial life”), animal “de-extinction”10 projects (bringing back dinosaurs and other animals, and perhaps in the future

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10 See, for instance, the Lazarus Project, which is conducted at the University of Newcastle, Australia, and which was named as one of the Top 25 inventions of 2013 by TIME Magazine.
dead humans), technologically modified or “augmented” or “enhanced” humans\textsuperscript{11} (sometimes referred to as “transhumanism”), and even “immortality”\textsuperscript{12}. The definition of life itself is being seriously impacted, with implications on “beginning of life” and “end of life” issues (from conception, abortion, to euthanasia).

My main idea is that Muslims must take full consideration of the integrated paradigm of the cosmos that has emerged from modern science: our existence cannot be dissociated from that of the rest of life on Earth and its history, and this cannot be viewed separately from the natural elements that surround us and relate to us. After all, we are made of the same elements as Earth, and our DNA is based on the same biochemistry as that of the rest of life on Earth, including plants and animals. In fact, we now know that many other animals have intelligence (sometimes quite advanced), some of them have language (not nearly as sophisticated as ours, of course), some can make tools and build things, some have family structures and express sadness when one of theirs dies, etc. Clearly this must affect our view of animals, at the very least, and life more generally.

This also should give a new, grander understanding of the “Preservation of Life” principle of \textit{Maqāsid al-Sharía}.

Scholars\textsuperscript{13} see the theory of \textit{Maqāsid} as having roots in the Islamic rational theology and law that was produced by the Mu’tazila, since one of the prime principles of this school, namely divine justice (after divine unity) necessarily implies divine goodness in the laws that God would institute for humans. Furthermore, the earlier development and establishment of \textit{qiyyās} (juristic analogy) and \textit{istihsān} and \textit{istislāh} (rulings that are based not on sacred texts but rather on some clearly discerned benefit to the individual or community) as principal methods and principles of Islamic jurisprudence paved the way for the development of the \textit{Maqāsid} theory.

The principles of the theory of \textit{Maqāsid} are well known: a) the whole Shari’ah aims at benefiting mankind (in this world and the next); b) behind all laws are rational principles that can be inducted; c) the laws are not objectives in themselves, they can be transcended in cases where their strict application leads to problems while the objectives can be better fulfilled in other ways.

I believe that the principles of \textit{Maqāsid} (including but not limited to “the preservation of life, mental faculties, linage, etc.”), coupled with a renewed and enlarged worldview that is based on a thorough understanding of the universe as revealed by modern science, can help us Muslims formulate a holistic and proactive ethics system that can be applied to or meshed with the emerging and challenging fields of biological and informational technologies.

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\textsuperscript{12} See the project on ‘The Science, Philosophy, and Theology of Immortality’ at the University of California, Riverside: \url{http://www.sptimmortalityproject.com/}.