

ISLAM, SCIENCE AND MUSLIMS

A Conversation with Seyyed Hossein Nasr

The understanding of the relationship between Islam and science is intimately connected with many foundational issues. In this wide-ranging conversation Seyyed Hossein Nasr shares his ideas, hopes and aspirations for the Islamic polity. How can the Muslim world successfully come to terms with challenges posed by a science and technology-driven era without losing the Islamic characteristics of its civilization? What are the ways to revive the Islamic tradition of learning? How can Muslims living in the West contribute toward this revival?

Keywords: Islamic intellectual tradition; spiritual ambience; Islamic civilization; critique of modern science and technology; authentic *madrasah* system; revival of Islamic tradition of learning; cosmology; Faustian science; origins.

Iqbal: For more than two centuries, Muslims have faced a dilemma which seems to be insurmountable: in a world driven by science and technology produced by the West, how can the Muslim world cope with numerous problems requiring scientific and technological expertise without destroying the Islamic characteristics of its civilization? The answer suggested by the nineteenth century reformers was to import Western science and technology, without importing the value-system and the worldview that characterizes the modern West. Their premise was based on the notion that science and technology are value-free. On the other hand, you have always emphasized the need to ensure the preservation of the “Islamic space”—that unique aspect of Islamic civilization that is reflected in its relationship with the Transcendent. But this formulation has been severely criticized for lacking practicality. What is your response to this criticism?

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Nasr: *In the Name of Allah, the Infinitely Good, the All-Merciful.* This is a vast question that has many dimensions. There is a practical aspect and a theoretical aspect. As far as the practical is concerned, I accept that if, let us say, someone has malaria in Bangladesh, we should try to find the best vaccine against malaria. As for the various forms of Western science—whether it is in the form of medicine or electronics or other things that are mostly technology rather than science but nevertheless applied science—that are coming to the Muslim world, they are on a certain level, impossible to avoid by governments. No government can say we will not have telephone or something like that—there is no doubt about that. However, there is a much more profound issue that is involved. Most of the centers of power only concentrate on this question, with the idea that more science means more power and hence the Muslim world should try to follow as much as possible the developments of technology and match Western technology and science and outdo the West, like the Japanese who make better cars than those made in Detroit. This mentality, which is very prevalent in the Muslim World, is extremely dangerous, especially now that a part of the human family—that is the West which has already developed a technology on the basis of modern science—is already facing insurmountable difficulties and problems such as the questions pertaining to the destruction of the environment, those related to defining the human person and ethics and a thousand other questions. If the Muslim world also tries to join the camp of confusion and the destruction of the environment in the name of being in the twenty-first century, I believe, it will be suicidal. So on the practical level, while the Muslim World opens up to the application of modern science and acquires pure science itself, it has to learn this science and its applications with a certain amount of constraint and restraint in their application in the sense that it should not necessarily jump into every development and not try to emulate everything that is going on in the West. But as far as the theoretical aspect is concerned, Muslims must try to master the Western sciences, there is no doubt about that, but this mastery must be combined with a critical perspective based on the Islamic intellectual tradition.

Having said that, I now come to the second point—this is what I have been saying for so many decades. Islamic Civilization cannot simply emulate Western science and technology as they are without destroying itself. Anyone who says anything else does not really know what the philosophical foundation of modern science is, and what the impact of its applications are upon the world. If Islamic Civilization wants to continue to

be a living civilization, it is imperative for it to rethink the foundations of modern science at the theoretical level. It must initiate a process that will reinterpret, reintegrate, accept or reject various aspects of modern science in light of Islam's own worldview and metaphysical vision of the nature of Reality. And on the practical level, it must try to evolve independent criteria of what to accept and what not to accept.

So there are two different dimensions of what to do with modern science. One is on a practical level: Do we have airplanes or not, or something like that? On that level there are certain decisions that cannot be avoided in the fields of medicine, communications, and so on and so forth. But while doing that, the Muslim World cannot go, as the Americans call it, "gung ho", that is, going head long down a blind alley, trying to simply emulate whatever the West is doing. First of all, if we do that we will always be behind the West and secondly, we copy the errors of modern technology, which is wedded to greed to a large extent, and which is not independent at all of the failings of the human being, we will simply follow these errors, making it much worse for the Muslim World. Emulation has to be done with a fair amount of restraint, giving the Muslim World time to develop alternatives wherever possible.

On the theoretical level, there is a much more daunting task. And that is to try to understand Western science in depth. Having understood it in its own terms, then to try to understand it in light of the Muslim worldview, and not to try to cover over the very major differences that exist between the philosophy of modern science as it developed in the seventeenth century, and Islamic philosophy and Islamic thought which, in fact, gave rise to Islamic science.

Iqbal: Now at the practical level, the solution that you have just mentioned, seems to me the same as the one that has been with us for at least two hundred years: when the Ottomans and Muhammad Ali Pasha and other rulers saw Western armies at their doorsteps, they said 'well we need to have modern technology in order to cope with this military threat'. They formulated the solution in terms of acquiring just enough of modern science and technology produced by it to cope with the changed situation. My question is: Is it possible to actually have some type of restraint in this process? For instance, when we import modern communication tools, such as cell phones, they inevitably destroy the pre-existing modes of communication and interaction—they come as a complete package which cannot safeguard the Islamic space.

Nasr: Definitely. I am the last person to think that modern technology is

neutral or benign. Taken as a whole, it has a demonic aspect to it, which destroys much of the spiritual ambience, both inward and outward, of the human being. There is no doubt about that. I want this to be very clear in our discussion. In fact, when I talked about restraint, I meant that the Muslim World must not ape modern technology blindly but be able to develop its own critique of modern technology as was done in the nineteenth century in England by William Morris and John Ruskin and later in the twentieth century by many writers in the West. We have had very little of that in the Muslim World. We need that. We must be fully aware of all the dangers and not simply emulate everything that is going on. You mentioned the cell phone, which is a very good example. The cell phone has really changed the space in which many human beings live. It destroys that inner quiet space where we are alone with God. This little tool makes it inevitable for one to always be connected to the turmoil of the world. This is not something accidental. It is something very profound as far as its effect upon the human soul is concerned.

Having said that, let us focus on certain other dimensions. For instance, let us say a fire station or a government agency that needs to have immediate contact with its personnel and so forth. They are not going to accept that they should not have the cell phone because of these spiritual shortcomings. That is what I am saying, that on a practical level no Muslim government is going to accept that solution. What we as thinkers have to do is to provide a critique and try to show where restraint is needed and show how, in deeper ways, the whole ethos of modern science and technology—this whole enterprise—is integrally linked to its various parts so that one cannot take one part of modern technology and say this is wonderful, and leave others aside. I do not believe that is the case. Modern technology brings with it also a certain worldview, a certain manner of being, a certain way of acting, a certain conception of time. All time saving devices of modern technology destroy time. The email curtails the time in which you have to answer; it puts pressure upon you. This is a truth one can hardly deny. And I am the last person in the world to think that Islamic civilization can choose a part of Western technology which is good, and say it is wonderful and reject another part and say it is not good. Whatever form of modern technology is adopted, it will bring with itself its negative effects. However, at the practical level, I cannot see how many forms of technology can be avoided at the present moment of history but matters may change if we preserve a guarded and critical attitude.

There are certain aspects of Western technology that are going to be

adopted by the Muslim governments no matter what you and I say. I wish this were not the case, but this is the case and it cannot be avoided. Hence, since it cannot be avoided one should at least try to provide a critique of modern technology and attempt to curtail its negative influence as much as possible. I wish we could put it all aside and develop our own Islamic technology as it was done in the Middle Ages but since it is not possible at the present moment of history, what we need to do is to change the mindset of Muslims and make them aware of the negative consequences of being governed by machines. Most Muslims, educated in modern institutions, especially in the subcontinent of India, carry a very deep scientism with them which is held almost religiously, you might say. And it is very difficult to overcome that.

What we need to do is to be brave enough to show the shortcomings of modern science itself and try to provide another intellectual and spiritual framework for understanding that science. And then we must take the next step of developing an Islamic science—something about which I have spoken for four decades now. Thus, what is needed is to first master the modern sciences—while remaining deeply rooted in the Islamic intellectual tradition—and then take the next step within the Islamic framework, and not in the framework of modern science. No Muslim physicist can say that he does not care about what quantum mechanics has discovered, that it is irrelevant. What is needed is to understand quantum mechanics and then reinterpret it completely differently from the way in which the Copenhagen School has interpreted it on the basis of the bifurcation, the dualism of Cartesian philosophy which underlies the whole of the modern scientific enterprise. If we can do that on the intellectual level and create an authentic Islamic philosophy of nature, or metaphysics of nature, and, secondly, an Islamic science of nature on the basis of both our own scientific tradition and what the Westerners have discovered and finally, reintegrate the latter into our own tradition, then it would be possible to create our own technologies on the basis of that science. But today, the economic, military, and political forces of the world are so strong that if you just say ‘let us simply reject modern science and technology’—no one is going to listen. That is the whole problem. Nobody is going to listen now. If you look at the present Muslim World, whether the governments are pro-Western or monarchies or republics, whether they are the product of Islamic revolutions or are secular, they are all unified in their glorious hymning of the praises of modern science and technology. It is that attitude which has to change. And I think that, thank God, during the last thirty

years there has been at least some change, and partly due to my own humble efforts; things are better now than they were thirty, forty years ago. Now at least there are *some* voices which understand that this is not the way to go, that the Islamic intellectual tradition has to be able to provide a critique of modern science and of modern technology. And if we have no choice in building an ugly bridge over this river, we should at least not say 'Oh, how wonderful this science is'; we have to change our attitude. If we have no choice but modern medicine—we have to at least realize its shortcomings, all the while attempting to redevelop our own traditional Islamic medicine, which has been left on the back burner, you might say, and now that you have acupuncture coming to the West, certain people are talking about reviving Islamic medicine. We have to get out of that mentality. That is what is really most important.

I disagree completely with Muhammad Ali Pasha and others who said just go to Europe and learn how to make guns and come back and have a better army and forget everything else. We cannot do that; everything goes together—from the making of guns to computers and cell phones, to making of steel, to making of airplanes. Technology itself imposes upon man a type of worldview. It changes man into a machine in many ways. And Islamic civilization must try in every way possible not to have that happen to it. And when I say that governments have no choice now, I do not mean that we will never have a choice. But at the present moment, we have to employ a delaying tactic. That is, rather than jumping headlong into emulating Western science and technology, we must do it where it is absolutely essential, where there is no other choice—meanwhile buying for ourselves time to create our own science and, *inshā'Allāh*, one day our own technology.

Iqbal: At one level, this whole question of the revival of Islamic scientific tradition, I feel, is intimately connected to the revival of Islamic tradition of learning itself.

Nasr: That is right.

Iqbal: You were fortunate to have had the opportunity to grow up in an ambience permeated by the presence of masters of traditional philosophy and Sufism, something you have eloquently described in your *Intellectual Biography*,¹ but what opportunities are left for Muslims to grow up in such

1. Hahn, Lewis Edwin; Randall, E. Auxier; and Stone, Lucian W. Jr. (2001), *The Philosophy of Seyyed Hossein Nasr*, The Library of Living

a rich intellectual and spiritual atmosphere? I am particularly thinking about the Muslims living in the West: How do we provide that ambience to our young men and women in the West? We have not been able to create any institutions in the West, where our young generation can have a chance to imbibe the tradition.

Nasr: Let me first turn to the Muslim world. What we need to do is rather than imitate the Western educational institutions—which we have been doing for the past two hundred years since the time of Syed Ahmed Khan, and others—to strengthen our own traditional Islamic educational institutions. These institutions (*madāris*) unfortunately have become more and more narrow in their vision in many Muslim countries during the last few centuries, for example, the exclusion of the teaching of philosophy and logic, not to talk about mathematics and astronomy from their *curricula*. By saying that we need to reestablish and re-strengthen the *madāris*, I do not mean to say that it should be done in any sense of violent exclusiveness, political or otherwise. I mean the revival of the real and the authentic *madrasah* system. Second, we need to strengthen, within the Muslim World, the traditional method of transmission of knowledge and the combining of knowledge with ethics and spiritual qualities and virtues, which must be transmitted along with knowledge. And this is something that has to be done throughout the Muslim World—from the *madāris* of Malaysia to those of Morocco. In certain areas, for example, like Iran, there are very hopeful signs: many new *madāris* have been established recently, for instance those in Qum. Of course the quality is not very high in many cases because of the very large number of students, but there are some institutions where the quality is also high. Moreover, there is a large number of very fine young scholars, who also have experienced the transmission of the intellectual and spiritual aspects of Islam, and not only the legal. And we need to strengthen that total traditional educational experience within the Muslim World. It has not died down, by any means, but we just need to strengthen it.

Islamic civilization did not succeed in transferring the positive qualities of this *madrasah* system to the new universities that have been established since the nineteenth century—whether it be the University of the Punjab, or Calcutta, or Allahabad, or Istanbul, or Tehran, or Cairo. Those

institutions have simply tried to emulate the Western university system. And much of the quality of the relationship between the master and disciple, and the spiritual ambience has been left out, not to speak about the content of the courses that have been taught. No Muslim country has fully succeeded in integrating its traditional and modern educational institutions, which they founded in their own country in order to teach things like engineering, mathematics, physics or medicine, etc. Now, this is a major task that the Muslim World itself has to carry out so that this dichotomy between the two types of educational systems can be gradually overcome.

Already the World Muslim Educational Congress in 1977, which I organized along with the late Syed Ali Ashraf, Dr. Zubair and Abdullah Naseef, and which led to the foundation of several Islamic universities, attempted to do this but, unfortunately, this enterprise did not succeed completely because of certain denominational and theological perspectives which did not allow this movement to take full advantage of the Islamic intellectual tradition. For example, Islamic philosophy was not taken seriously in these Islamic universities. And when Islamic philosophy is not taken seriously, the other intellectual disciplines will not be taken seriously. So you teach the *Shari'ah* on one side, and modern science, modern sociology and modern economics on the other side. And then this is called an Islamic university, but this is not an Islamic university. An Islamic university is a university in which all subjects are viewed in the perspective of Islam. And the best example of that is what they did in the West in the Middle Ages. The Western universities were created on the basis of the *madrasah* system. But they were Christian. So they took the Islamic curriculum and many educational practices and they Christianized them. They integrated them into their own theological and philosophical perspectives, and they created the medieval universities which were totally Western, which were totally Christian, and very different from the Islamic models from which they had learned so much. Unfortunately, we have not been able to do the reverse. So the current situation in the Muslim World itself is far from being ideal.

When we come to the situation of Muslims in the West, what we need to do is transfer the Western intellectual ambience to our institutions in the West through the use of our own intellectual tradition and sources, ideas, as well as human contact. Now as far as the books are concerned, I think this has already been accomplished to some extent during the last forty years. That is, we have translated a considerable number of books from the

Islamic intellectual tradition into contemporary languages and interpreted Western thought from the Islamic point of view; I myself have contributed humbly in this effort to the best of my abilities and others have done the same. We now have many books on Islamic philosophy and sciences, theology and Sufism, and so on and so forth, translated or written in a contemporary language comprehensible in a Western ambience. And such texts are not as rare as they were forty years ago. But what we do not have is a center, a place, where the students could be trained in an Islamic way. We have now several Islamic universities in the United States but these have not been successful so far.

Now there is talk of another Islamic university being established in New York State, which would be the first major Islamic university in America. And they think of making it like Georgetown which is a Catholic University, or the Yeshivas which are Jewish institutions of higher learning or like the Albert Einstein University, or something like that. Whether they succeed or not, only God knows; in any case I am trying to help them along. But before we get to establishing big universities, I would like to see a smaller place, where twenty to thirty students could be trained under a few teachers who carry an intimate knowledge of the tradition within themselves. I am approaching the end of my career, and perhaps the end of my life—only God knows—but I have trained several generations of students and a dozen or fifteen very good young scholars over the last few years, who are now first-rate younger scholars. I hope to God that I have been able to transfer something of the tradition to these young people. What we need is a smaller place, where these people and those like them get together, and every year train a number of Muslim scholars. It is as if you were to have a handful of wheat. If you bake with it, you will get a loaf or two of bread and the wheat would be finished. But if you plant it, then next spring, you get a whole field of wheat, and you would be able to feed a large number of people.

Islamic education here in the West should go from a small unit to a bigger one. If you establish a small unit of very high quality, with twenty to thirty people at most, all gifted Muslim students, and transmit to them the real heritage of Islamic intellectual life including the sciences, and all that goes with them: philosophy, logic, mathematics, spiritual questions, all of these, then those people, in turn, could train others and in this way, after about twenty years, you would have several hundred people. Then they could become the faculty of a major university. I would go step by step like that. So, I often suggest to my friends that we should try to put our efforts

together and create one single center devoted to, let us say, “Islamic Intellectual Sciences”, or whatever you want to call it. It would have to include philosophy, logic, and some theology, and related subjects. One would not even have to give degrees. It could be a post-doctoral institution, like the Center for Advanced Studies at Princeton. It could be a place where devout Muslims who have Masters or Ph.D’s and who are interested in these things could come and receive this transmission. As for those who can serve as transmitters of tradition, there should be no problem to get at least a few such people. There are two or three very gifted young Iranian philosophers and thinkers who have come to America recently, whose English is not that strong, but who have the knowledge, who have spent fifteen to twenty years studying these traditional sciences. They can be employed and there are many others who would join and gradually, the goal could be accomplished.

Iqbal: Can we further explore the practical aspects of this process? I recall that at one time you were involved in an effort to set up such a center at Karachi with late Hakim Muhammad Said but the effort did not succeed. The governments in the Muslim world, as you said, are not interested in this venture, they perhaps do not even understand the need of such a revival.

Nasr: That is right...

Iqbal: That is why I wanted to start with the West—it is paradoxical—but I feel here we have a greater chance of success; that is why my initial question was for the West because...

Nasr: I agree with you to a large extent, but there are some exceptions in the Muslim world.

Iqbal: Considering the presence of a substantial private sector in the Muslim world, one would expect the emergence of new institutions for the revival of Islamic tradition of learning through the private sector, but it has not happened. The national resources are controlled by governments which are not interested in investing resources for the revival. Under these circumstances, how can a revival begin?

Nasr: I think there are some efforts already being made in this respect; there are at least a few very good candidates for success: Iran, Malaysia, Muslim India and Pakistan. In Iran especially, there are a number of universities that are being run by the *‘ulamā’* and not by the government—these are really *madāris* which are also introducing foreign languages, modern sciences and other subjects taught in modern Western institutions. And I hope that a lot of good things will come out of that. But it is true in

general that the governments of the Muslim world are not interested in the revival of the Islamic tradition of learning. But if there are small units of Islamic learning formed here and there even in the Muslim world, the larger public and governments will sooner or later show a greater interest because of the quality of people being trained in these institutions.

For many years, I was in the middle of this battle in Iran where I created the Iranian Academy of Philosophy or the Royal Academy, with a very good budget which I was able to get directly from the Queen without going through all the red tape. And within a few years, the Iranian Academy showed remarkable accomplishments. In fact, the world came to know about it. Many people in Iran, even the government, who were skeptical about it, were very surprised, and soon very supportive. The reason was that the Academy published first-rate articles in its own journal *Sophia perennis* (*Jāwīdān khirad*) as well as in international journals and leading philosophers wanted to come to Iran to see what was going on. So, though you cannot change the mind of these governments, you can succeed by showing results. Of course, universities are being run by the governments but what you and I are talking about is not going to occur at a macro level, like in a university of sixty thousand students, for example at the University of Cairo. It will only occur if you have a small number of people. I think, we should go—at the present moment in Islamic history—not for big quantitative projects in the field under discussion here, but for small qualitative pilot projects, which, once successful, will attract others precisely because of their success.

Iqbal: The process of revival also requires an introspective awareness of the process that led to the decline of the Islamic intellectual tradition. I find this area is still a virgin territory; there are many false answers, like the Goldziher thesis of foreign sciences versus Islamic Orthodoxy, or like the simplistic answer that “al-Ghazālī killed science” in the Muslim world. But there are no real answers, at least I do not know of any. This is also an area in which you have not written much. There are several aspects of this question, including the question of dating. What are your views on this: when and why did the Islamic intellectual tradition wither?

Nasr: First of all, I do not believe that the whole of the Islamic tradition declined in every aspect. This is not true. For example, we can talk about art, which is a very important aspect of Islamic Civilization. The art of weaving, for instance, did not decay until very recently. Some of the most beautiful Persian carpets were woven in the nineteenth century. These are masterpieces. Likewise architecture—beautiful buildings continued to be

built right into twentieth century. So, you have to see what fields you are dealing with. Intellectually, for example, Islamic philosophy, which is the heart of the Islamic intellectual tradition, had a major revival in Persia in the nineteenth century and also produced very important figures in India, for example, the scholars of Farangi Mahal, in Lucknow, the Khayrabadi school, and many others. So one cannot talk about decadence in general. But there is no doubt that all civilizations have decayed in a certain manner. If you take, as a norm, a spiritually vibrant organization which we call civilization, all non-Western civilizations have decayed passively whereas Western civilization has decayed actively. That is the way it was until quite recently. Then since the last century, non-Western civilizations are becoming more dynamic but that does not mean they are not decaying, because dynamism is oftentimes not according to their own spiritual norms. This is a very complicated issue, which I have addressed in several of my essays during my life.

But let us turn more specifically to the question of the sciences and philosophy, because they go together—the intellectual tradition of Islam does not separate the philosophical and the scientific. The Muslim world suffers from the fact that much of its understanding of its own intellectual tradition is dependent upon Western studies of Islamic philosophy and the sciences. And the Western studies, which go back a long time but in the modern sense began in the nineteenth century, have looked at the Islamic intellectual tradition from the point of view of the West. And that is quite logical. For them, all of these sciences and philosophy, sort of magically, came to an end in the thirteenth century when the intellectual contact between the Islamic World and the West came to an end. It has taken a long time, several decades, for people like Henry Corbin, Toshihiko Itzutsu, myself, and many others to try to reassert the truth of the idea that Islamic philosophy did not end with Ibn Rushd. And during the last few decades, scholarly works have been carried out in the field of physical sciences, mostly by Western scholars, which have gradually changed the earlier idea that Islamic science sort of began to decay with the fall of Baghdad or something like that.

Then there was the discovery of the School of Marāghah, the great astronomical school. We owe a great deal of that discovery to E. S. Kennedy and several other Western scholars. And also a few Arab scholars, like George Saliba. Then we have the discovery of Mamlūk astronomy and astronomy in the Yemen. David King did a lot of work in this field and revealed a whole new chapter in the history of Islamic astronomy. In the

last few years, in Istanbul and other places in Turkey, many studies have been carried out on the sciences in the Ottoman period, and a new chapter is being added there to the history of Islamic science.

My own view is that if we study all of these later works seriously, even from the point of view of Western science—which we are now appraising from the Western point of view unconsciously, mostly because the Western science is considered to be so important that we consider it to be the barometer of Islamic civilization, as a kind of Western standard that we have adopted, which I do not accept, but I think the Muslim intelligentsia as a whole accepts it—even if we accept that, this barrier would be pushed forward, that is, the period of decay would not be in the thirteenth century, but much later. For example, just in the last two or three years, people have discovered, and again this goes back to Professor Saliba of Columbia University, that Shams al-Dīn Khafīrī, who was always considered to be a major theologian or philosopher, living from the fifteenth century to the sixteenth century, was also a major astronomer. He was one of the most important of the later astronomers.

I believe that if we investigate the whole of the Muslim world, especially in later centuries Muslim India, Persia and the Ottoman world and not only the Arab part of Islamic Civilization, we will discover that very notable scientific activity continued to take place up to the eighteenth century, in some fields perhaps even later into the nineteenth century, until gradually Western science began to come into the Muslim world and it, then, gradually replaced the earlier Islamic philosophical and scientific tradition. In the field of philosophy, the Islamic philosophical tradition has never died. It had some of its greatest representatives in the twentieth century in Iran, people like ‘Allāmah Ṭabāṭabā’ī and others, with some of whom I studied myself.

We have to write a definitive and complete history of Islamic science, especially in the later centuries, which we do not have. Muslim scholars have been for the most part without much initiative, emulating what Western scholars have said, and Western scholars, until the advent of events about some of which I spoke above, concentrated on the earlier period of the history of Islamic science about which we now have a great deal of knowledge. So a complete history of Islamic science from our own point of view is the first thing that actually has to be done before we can judge about the when and how of the decadence of Islamic science.

Secondly, I believe that if we do this, we shall find out that the Islamic scientific tradition was at the peak of history of science—if we were to

envisage it in the manner of George Sarton—from, let us say, the eighth to the fifteenth centuries. After that it was no longer at the peak of global scientific activity and the Western scientific tradition became more active. But nevertheless, the Islamic scientific tradition continued in a creative manner into the twelfth to thirteenth Islamic centuries, that is eighteenth to nineteenth centuries of the Christian Era. And Islamic philosophy continues to our own day.

Now we could ask the question, why did—I would not call it decadence—the decrease of activity take place? I think, however, that this question is badly posed because it is based on the presumption that the normal activity of every civilization is to be very active in the sciences of nature and mathematics. This is not true. We know that this is not true when we study the history of science, for instance during thousands of years of Babylonian civilization in Iraq, thousands of years of Egyptian civilization—civilizations with a very long history. Or Roman, Chinese and Indian civilizations. In many cases, the great scientific activity in fact came when that civilization was dying. That is what George Sarton used to say. For example, in the Babylonian civilization, which is known for its great scientific works, science came at the time of the death of that civilization. The same is true for Egyptian civilization in certain scientific fields. Certainly the same is the case of Greek civilization, that is the great works of Greek science—of Ptolemy and Euclid and people like that—was after the Greek world had fallen apart, its religion was dying, the culture was dying and its political life was being dominated by the Romans. There is no doubt about that. In other civilizations, like the Indian and Chinese, which have had a very long history, you have periods of intense interest in what you would call the sciences, let us say the mathematical, physical, astronomical, chemical or alchemical sciences, and periods in which there was not such great interest. And during the period when there was not such great interest, oftentimes these civilizations produced very great art, architecture, statecraft, literature, and many other things.

Science in the Islamic civilization, in contrast to the Babylonian, began very early, that is, it began with its peak of scientific activity early in its history. Jābir ibn al-Ḥayyān, for instance, lived in the second Islamic century. The field of alchemy has never surpassed Jābir. And in the ninth century you already had very great astronomers and mathematicians. By the tenth century you had people like al-Bīrūnī and Ibn Sīnā. It continued on a plateau with certain ups and downs for a long time, for many centuries, and then gradually the energies of the civilization turned

elsewhere. If you lived around the year 1500, when the West was becoming very powerful and the age of exploration had begun, Europeans had discovered the Americas, reached Asia through the Indian Ocean by navigation around Africa, but it could not penetrate the lands of *dār al-islām*. At that time the Muslim world was politically still very powerful. Probably the most powerful empires in the world were the Ottoman and the Şafavid, and the richest perhaps was that of the Mughuls of India. Economically, as well as politically and militarily, they were still very powerful. Artistically, some of the greatest works of art in the history of mankind were created during this period. The Taj Mahal, the Shah Mosque of Işfahān, the Sultan Ahmad Mosque in Istanbul, you name it, incredible works of architecture, of calligraphy, of literature, of many other things were produced at this time.

So to judge a civilization by asking, “why did science decay in it?” and equating that decay with the decay of that civilization is false, because the normal life of a civilization—of any civilization that we know through history—has not been known to have been constantly interested in the sciences of nature or in mathematics, so as to put all of its creative energies into those domains. There comes a moment when a civilization is satisfied with its cosmological worldview, its view of the cosmos, and you might say the thrust of creative activity then turns to the domains of philosophy, mysticism, art, literature, law and many other fields. So I think we should not even ask the question in this way. Islamic civilization had a longer period of intense interest in the sciences than any other civilization we know, including the Western, because it is now only about four centuries since the time of Galileo, that the West has shown intense interest in the sciences and made science its central intellectual concern. We do not know what is going to happen three hundred years down the road. We should not extrapolate. We simply do not know. I think to have a deeper view of this matter, one should try to understand the dynamics of the propagation of science within Islamic civilization in terms of Islamic civilization itself.

The question of revival of which you spoke so well and so truly, must be answered in light of our own Islamic scientific tradition, which is something I have been speaking of for more than forty years. It should not be posed in this false fashion in which it is being asked today; that is to say that the Islamic science died seven hundred years ago and now we are trying after so many centuries to revive it. We will never be able to revive it authentically if that is our view. Modern science should have been grafted upon the body of the existing Islamic scientific tradition in the late

nineteenth and early twentieth centuries. Something of that was done in the field of medicine by the Hamdard Institute after the partition of India and by Hakim Mohammad Said and Hakim Abdul Hamid, God bless their souls, who died just recently—one of them was murdered in Karachi, as you know. This work grafted, in a sense, the technology of Western medicine, upon the existing medical tradition of the Muslim world. It is too bad that it did not succeed more in other fields.

A project which has been a kind of “ambition”, a desire of mine, all my life, is precisely this: to be able to write a complete history of Islamic science from the point of view of Islamic civilization. It is a work that I began in the form of *The Annotated Bibliography of Islamic Science* in the 1970's. Seven volumes were completed before the Iranian Revolution. Three came out under my own direction, and the other four are finally coming out after all these years. This project of assembling the bibliography of Islamic science was conceived as a major step toward a true appraisal of Islamic science. I think that the question of the revival of Islamic science, as you say, is totally and completely related to our understanding of the decay, or death, or whatever else you may want to call it, of Islamic science before modern time as well as to its earlier history written not on the basis of only partial knowledge but in the examination of all the sciences.

Iqbal: I think this question looms very large because the West was able to turn its scientific discoveries into aggressive technologies and then use those technologies to conquer the Muslim world and destroy its institutions. Therefore most Muslim reformers, of whom we talked earlier, thought that it was only the Western science that conquered them and their solution was to prescribe acquisition of this science. But can you suggest any remedy to the present situation? You gave the example of medicine. But many other disciplines, such as chemistry and physics, are used in the development of technologies which then help economic growth. These technologies are also used in the production of weapons and become a means of controlling the rest of the world. These are, I think, essential components of the modern world. How does the Muslim world come to terms with its lack of expertise in this area?

Nasr: This is a very profound question. From a religious and philosophical point of view, I shall try to answer you. Modern science is what I call a Faustian science, in the sense of Goethe, that is, the result of bartering your soul to the Devil for obtaining knowledge of the world. And that is why science has run havoc upon the Christian view of the universe in the West

and, although it appears to be neutral, religiously, it is not really so because people interpret it as a kind of philosophy itself, as a scientism which has dominated over the Western worldview and its application in the form of technology despite its partial successes is destroying the whole world, the environment and everything else. Now for the Muslim world to think that it can gain that power without making that barter with the Devil, you might say, is really daydreaming. I do not believe that that will happen. To gain tremendous power with nuclear bombs, for instance, to answer the bombs of the West, or laser-guided missiles to answer the laser-guided missiles of the West, and at the same time say that it is an Islamic laser-guided missile, this is not going to happen and it is against the truth of Islam to make such a claim, because this whole enterprise of modern science is based on the forgetting of the spiritual dimension present in nature, that is, cutting off the Hands of God from nature. Even if an individual scientist may be pious, philosophically speaking, the spiritual dimension does not come into any physical observation of any calculations, thus it is irrelevant as to how a modern scientist looks at the world of nature. As a result, the world of nature is studied in abstraction from the reality of God. Even if there are certain scientists who still believe in God, it is irrelevant in our present argument. That is why you can have a physicist, who is an atheist, and you can have a physicist, who is a Catholic, and both can share in the Nobel Prize in physics; whether they believe or do not believe is irrelevant to the science that they are doing according to the modern understanding of science.

Now what we can do, what the Muslim world can do, is the question that you are posing. I do not believe that by trying to master all the means of power—technology, you might say—you would be able to both remain Islamic and completely independent. We cannot become independent that way. Japan almost lost the Second World War and had they not fought the war, they would have remained one of the world's major military powers. But at what expense, at what cost? We see now in Japan, fifty years later, what has happened to Buddhism, what has happened to religious traditions in Japan. How atheism and agnosticism have spread in the later generations is there for everyone to see. Or take China, which can become a world power. But is it going to be a Confucian China or not? That is really the crux of the matter.

It is of course very difficult to tell Muslim governments, “do not have these weapons”, because they want to be able to be strong and defend themselves; at best, a good government wants to defend its people. And

yet, if we, who are thinkers, try to do the daydreaming, which Muslim reformers have been doing for the last hundred years, or longer than that, if we think that we can master military and other forms of technology of the West, without the negative elements of technology and without the materialistic worldview that goes with it, I think that we are betraying our vocation and responsibility to the community. Those who believe in the dreams of all of these reformers, going back to Mohammad Ali Pasha, Muhammad ‘Abduh and Jamāl Dīn Afghānī, and even including Sa‘īd Nūrsī of Turkey and Muhammad Iqbal, believing that we can gain that technological power and at the same time remain authentically within the Muslim worldview, are themselves dreaming the impossible. I think what we have to do as Islamic scholars is to say that we must preserve the Islamic worldview as far as science and nature are concerned no matter what the worldly consequences.

Secondly, in the same way as some people in the West are obligated to defend the environment against what modern technology is doing to it, we need to protect our environment. Thirdly, we should try to understand the Western sciences and integrate them into an Islamic perspective. And that has to be done at the forefront, at the very frontiers of the sciences, especially physics and within it quantum mechanics, to re-interpret quantum mechanics in a metaphysical way, not just through the Copenhagen School and Cartesian bifurcation which underlies the whole understanding of modern quantum mechanics. That is why in fact it is philosophically so difficult to understand and so obtuse, and this is from where our problems arise. The same could be said of other fields.

And fourthly, we should try to create islands, as much as possible, within the Muslim world, for the continuation and practice of alternative technologies based on the Islamic view of nature and of science, including the fields of medicine, of pharmacology, of agriculture, and other fields in which it can be done. Let us hope that this madness toward the creation of ever more deadly armaments and all that is going on in this domain in the world, the weapons and so forth, would gradually die down and somehow humanity can be left to plant the seed of a sacred and spiritually authentic science and nurture our true relationship with nature for the future.

Iqbal: I have a short question in relation to some criticism, especially by David King, of your work, and then I want to finish with the question of origins, especially of cosmological origins. David King and some other historians have said that you “idealize” Islamic science without defining what you mean by Islamic science and I know you have defined it so many

times in great detail. But in this particular review that I have in mind, Professor King talks about very specific issues pertaining to your understanding of history of mathematics.² I believe he was referring to your book published during the Festival of Islam.

Nasr: That is right. *Islamic Science: An Illustrated Study*.³

Iqbal: I do not know if you have ever responded to this kind of criticism.

Nasr: No, I have not been in the habit of responding to criticism of my books, but let me make two points in relation to the criticism of David King and people like him against my work on Islamic science. David King made a couple of corrections, especially the misreading of the description of an instrument, in which he was right and for which I am grateful. We were doing this book quickly, for the 1976 Festival of Islam, and those errors should have been checked. There were a few scholarly errors which he pointed out and he was right. The more important issue is the whole perspective in which I have studied the history of Islamic science, one which is rejected by him and many other Western historians of science, who are really positivists. They look at the history of science from the point of view of the foundation of the discipline by Mach and Sarton and people like that, who at the very beginning, rejected the views that Pierre Duhem

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2. David King wrote a very critical review on Nasr's book in *Journal for the History of Astronomy* 9, Cambridge 1979, reprinted in King, David A. (1986), *Islamic Mathematical Astronomy*, Variorum Reprints, London, pp. 212-9, in which he states: "[Nasr's] philosophy, coupled with his disdain for Western science and civilization in general, which are in evidence in every chapter, make the work very much a personal interpretation rather than a historical survey... A curious omission from Nasr's chapters on mathematics and astronomy is any serious discussion of the peculiarly Islamic aspect of Islamic mathematics and astronomy.... The three Islamic aspects of Islamic astronomy, are firstly, the determination of the visibility of the lunar crescent at the beginning of each Muslim month, secondly, the determination of the astronomically-defined times of Muslim prayer, and thirdly, the determination of the qibla or direction of Mecca. Nasr ignores the first of these aspects completely, and devoted three or four noncommittal sentences of his own to the second and third, which he calls the 'cosmic dimension of the Islamic rites'. Muslim astronomers concerned themselves with the determination of crescent visibility and of the prayer-times and qibla for over a millennium. This activity and the vast corpus of Islamic literature dealing with it are worth more than a few sentences in a book bearing the title, *Islamic Science*" (pp. 212-3).
 3. Nasr, S. H. (1976), *Islamic Science: An Illustrated Study*, World of Islam Festival Publishing Co. Ltd. London.

had of a non-positivistic understanding of the history of science. So as the history of science developed it became based on the positivistic view of science—it is that which I rejected at the very beginning of my scholarly life—and what I tried to do was to understand what science means within the context of the Islamic intellectual worldview. As for what I mean by Islamic science, I have made that very clear, although it is not easy to define what science is. If you ask a Westerner as to what science is, that is a difficult question for him to answer. And the best answer was given by a great historian of science: science is what scientists do.

Iqbal: Right.

Nasr: You are a scientist yourself. That is probably the best answer you can give, because if you say, “science is based on this or this particular scientific method...” it does not work for Kepler or Einstein; if you say anything else, again there are exceptions. Science is what scientists do. And you might say that Islamic science is also what Islamic scientists have done. But more than that, I have tried to situate that science within the total context of the Islamic intellectual universe, and I think that I have made that clear in my study of the history of Islamic science. But that was not, of course, accepted by Western historians of science for a long time; however, now there are some who accept my view and try to understand the history of science of each civilization from its own point of view. My criticism of Joseph Needham was based on this same question. For his book, *Science and Civilization in China*, he had a whole team at work at Cambridge University, and I was all alone as a young man, but I wrote *Science and Civilization in Islam* as a response to his interpretation of Oriental science. At that time he had just begun to write his monumental *Science and Civilization in China*. But he was writing from the point of a crypto-Marxist Western scientist, which is very different from writing from within the point of view of Confucianism and Taoism. Now the case of Islamic science is the same.

I think that I have laid out what the methodology should be for the study of the history of Islamic science in books which I wrote a long time ago in the sixties and seventies, and now we have a whole generation of younger Muslim scholars, even Western scholars in the history of science, who are not opposed, but in fact are very much in favor of my approach to the subject. There are, however, still many opponents. I have always respected good scholars in the field, such as David King, even though they have not had the spiritual perspective which Muslim scientists themselves have. And that is the whole problem. When Naṣīr al-Dīn Ṭūsī or Ibn Sīnā wrote about science, they had a particular view of the universe which

modern historians of science do not share, but even if this is the case, I always have had respect for them when it came to the discovery of historical facts, which is fine. They have rendered a great deal of service. What Muslim historians of science have to do is to develop their own understanding of what the history of science is. Not only what Sarton—who was my own teacher at Harvard, and he was a very great scholar—and other people have said, but to develop the history of science from an Islamic perspective. That is precisely one of the things that I have intended to do throughout my life. Now for your last question, could you repeat that please?

Iqbal: Yes, my last question is regarding the question of origins. And there are two aspects: one is the question of cosmological origin, and the other is the question of the origin of life. This is a great topic in the field of science and religion, and in your book *Islamic Cosmological Doctrines* you have explored three particular aspects of the question of origins but modern cosmology does not share that kind of worldview; it is altogether physical cosmology. So, how do we understand the views of Ibn Sīnā, Ikhwān al-Ṣafāʾ and al-Bīrūnī in view of the modern discoveries of physical data discovered with Hubble telescope and other instruments? In short, what would be an Islamic view of the origins of cosmos, considering the data that we now have and how would you compare it to that of Ibn Sīnā and al-Bīrūnī?

Nasr: I believe that what Islam, or for that matter Hinduism or Christianity or any other religion, teaches about the origin of the cosmos is not at all invalidated by whatever discovery is made in modern cosmology. Modern cosmology is an extrapolation of terrestrial physics, based on the thesis that all the laws of physics that we have studied on the earth apply to the whole cosmos. Beside the fact that this is an extrapolation and we really do not know, it excludes any factor which cannot be measured on an instrument. And therefore it is bound within the measurable world of classical physics, as well of modern physics and quantum mechanics, whereas the cosmological doctrines of Islam, or any other traditional religion, are based on a total vision of reality, a reality not only of God but also what we call the angelic or nonmaterial levels of reality which are not at all, in any way, affected by whatever we may discover about physical aspects of the cosmos. I am very skeptical about taking all these modern cosmological theories that seriously; they change every ten years. There is so much extrapolation, there is so much unknown, and what is presented to be the latest remarkable cosmological theory, becomes obsolete so quickly because somebody comes up with another little beep in the heavens or something

like that, or they redo a certain measurement or calculation and a new theory comes up. Multiple universes, string theory, big bang theory—ever since I have been a student there have been five or six major theories expounded.

And I do not think that those who theorize about the cosmos on the basis of modern physics and chemistry should use the term cosmology. These are not cosmologies. Cosmology means the science of the cosmos and the cosmos is not limited to its material or measurable or visible aspects. Those are parts of the cosmos, but not the whole of the cosmos. And so I do not take that seriously. What we have to do is to reformulate the Islamic cosmology on the basis of the teachings of Islam and then open it up to see what modern cosmologists say. And it is not a question of making these facile correlations, like to say, “the Big Bang corresponds to *kun fayakūn* or the *fiat lux* as some Christian theologians say. For soon along comes somebody and says that there is no Big Bang. Ten or fifteen years ago there was a conference held in Philadelphia between Jewish theologians and cosmologists concerning the Big Bang. These days, however, there are many cosmologists who do not believe in the Big Bang any more. I think that the two types of cosmology, that is religious cosmology based on a metaphysical vision or view of the universe and modern cosmology, should not be confused. They are two very different forms of knowledge and they talk about very different things, you might say. Modern cosmology is based on the thesis that any observable phenomenon of physics on the earth which is measurable applies to the whole of the universe, that is, the stuff from which stars are made is the same as the stuff that you and I walk on in the streets. That is a very big presumption that cannot be proved scientifically, and it is part of the assumption of modern reductionism, of modern scientism. So I think that what we have to do is to show that the validity of Islamic cosmology has nothing to do with it. This is simply another art, another science, another way of looking at things. It is just unfortunate that the same word is used for two very different disciplines, very different intellectual engagements. The traditional cosmology and modern cosmologies which have been proposed in the last century, and which are an extrapolation of terrestrial physics, are very different.

As for the question of the origin of life, I believe—and this is not just what I believe but it is the view of the Islamic intellectual tradition, and is confirmed by the perennial philosophy, all origins have to do with Being, because everything that exists comes from the act of Being, Pure Being, if

we speak in the language of Western philosophy, or more religiously speaking, with what we call the Hand of God as the Author of creation; whatever is created has ultimately the same author. Now, life is a very different kind of phenomenon on the surface of the earth where we observe it from the inanimate world, and the idea that the relation between that Author of creation and creation is only at the point of the origin of the world and that the Big Bang was at the beginning and there is no other relation afterward, is itself quite a presumption which of course, Islam does not accept. It believes that the Will of God works through creation at all times, even in your life and my life, and therefore, the origin of life becomes very easy to see. It is another creative *fiat*, another descent from the divine realm, the introduction into the material world, into the spatial temporal matrix of another form of reality. Therefore, although we try very hard to create continuities between the chemical and the biological, there is not in fact a complete continuity; there is a jump, a quantum jump, you might say. Now in modern science where the Hand of God has been cut off from the world, the power of creativity is seen as being within the universe as a kind of immanence, a kind of pantheism, without scientists using such terms. That is, the power of creativity is taken from God and given to nature itself. Suddenly we have a jump from chemicals to a live creature. That jump is taken to be from within the world of nature itself. People feel very comfortable with that. But if you say that there is a transcendent cause in that process, then they would feel very uncomfortable with that assertion. That is because of the philosophy that is today dominating over the modern world, although there is no logic to that whatsoever. If you talk about a jump caused by factors from within, rather than from without, this is just startling and just as remarkable.

And the same holds true for the jump from life to consciousness, and this is an even greater jump. I mean, when you see a bird flying, there is no logic whatsoever to assume that the wing gradually grew out from an organ irrelevant to flight or to assume that the eye gradually developed and suddenly began to see. There is nothing really more absurd in the world when you think about it. But we want to accept it as certainty because we do not want to accept the levels of reality that are manifested in our world. There are different realities, different forms, different species, different forms of life, different capabilities. But I, for one, believe that the teachings of Islam, as developed by the cosmologists about whom I spoke in my book on cosmology—and there are other forms of Islamic cosmology, those three being the most important but by no means representing all forms of

Islamic cosmology—remain as valid today as they ever were. If you have really gifted Islamic philosophers and scientists deeply rooted in their tradition, they will be able to integrate everything—absolutely everything—that modern science has discovered about life based on fact and not merely conjectures and unproven hypotheses into that perspective, without sacrificing anything theological or neglecting the discoveries of science. There is nothing that science has discovered qua fact and not merely interpretation based on ideological assumptions that cannot be fitted into that hierarchical vision of being and of God's Power through all the levels of reality down into the physical world.

Iqbal: Thank you very much.

Nasr: *JazākumuLlāhu Khayran.*