

Contribution of Some Contemporary Muslim Scientists and Thinkers

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The status of man as the vicegerent of Allah makes him accountable for the implementation of commandments revealed by Allah.¹ The Almighty created resources for him and bestowed him with intellect, discernment and sagacity so as to enable him to make the best use of all the provisions within the framework of the *shari'ah*² and elevated him to the status of *ashraf al-makhlūqât* (the best of the creation).³

Prophet Muhammad (SAAS) is reported to have said that, "Every child is born with Islamic disposition. Then his parents make him a Jew, a Christian or a Magian"⁴. It can be inferred from this *Hadith* that man is influenced by his environment which may lead his deviation from the natural tendencies and the Right path of Islam. Similarly, man by nature loves virtues like truth and mercy and hates vices such as falsehood and cruelty.

The declaration of the Creator of the universe that everything has been made subservient to man⁵ provides a great incentive for the exploitation of all the resources for the welfare of mankind. The Prophet (SAAS) has declared that the search for *'ilm* (knowledge) is obligatory on every Muslim⁶. The *Qur'ân* provides some clear instructions to the believers which serve as stimulus to initiate serious activities in the field of scientific studies and research. Allah also commands the Muslims to travel in the earth in order to see the fate of those who rejected the Truth.⁷

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A great deal of emphasis has been laid in the *Qur'ân* on the importance of different scientific methods such as observation, reflection, reasoning, analogical reasoning, deductive and inductive methods. Allah commands the man to observe and reflect upon the manifestations of His might in the heavens and the earth. The physical processes are treated as signs of Allah for those who reflect on them.⁸ The human beings are persuaded to apply their intellect and ponder over the various physical phenomena occurring around them. As the *Qur'ân* mentions:

Assuredly in the creation of the heavens and the earth; in the alternation of the night and the day; in the sailing of the ships through the ocean for the profit of mankind; in the rain which Allah sends down from the skies and the life which He gives therewith to an earth that is dead; in the beasts of all kinds that He scatters through the earth; in the change of the winds and the clouds which they trail like their slaves between the sky and the earth; (here) indeed are signs for people who use their 'aql (reason)⁹.

Do they not travel through the land, so that their hearts (and minds) may thus learn wisdom and their ears may thus learn to hear? Truly it is not their eyes that are blind, but their hearts which are in their breasts¹⁰.

And for you He has subjected the night and the day, and the sun and the moon to be of service, and the stars are also subjected in service by His command. Verily, herein are signs for the people who have 'aql (reason)¹¹.

If there were, in the heavens and the earth, other gods besides Allah, there would have been confusion in both!¹².

The above mentioned last verse is designed to focus attention on the Oneness of Allah by arguing that in case there

had been many gods, the universe would have plunged into chaos and disorder. But since it is safe and operating with an extraordinary precision, it means that there is only one Creator and Sovereign- Allah.

The following Qur'anic verse provides an example of the analogical reasoning: "It is Allah who sends forth the winds, so that they raise up the clouds, and We drive them to a land that is dead, and revive the earth therewith after its death such is the Resurrection"¹³. In this verse an inference has been drawn from the revival of dead land that Allah will resurrect the dead human beings on the Day of Judgment.

The deductive method of reasoning can be seen in the verse that: "Allah is the Creator of all things, and He is the Guardian and Disposer of all affairs"¹⁴. It can be deduced from this verse that human beings, animals and plants are creatures.

The inductive method used in the *Qur'an* is equally lucid and forceful as shown in the verse that:

Say (O Muhammad S.A.W.S): "O Allah! Possessor of the kingdom, You give the kingdom to whom You will, and You take the kingdom from whom You will, and You endue with honour whom You will, and You humiliate whom You will. In Your Hand is the good. Verily, You are able to do all things. You make the night to enter into the day, and You make the day to enter into the night (i.e. increase and decrease in the hours of the night and the day during winter and summer), You bring the living out of the dead, and You bring the dead out of the living. And You give wealth and sustenance to whom You will, without limit (measure or account)¹⁵.

This verse leads to the conclusion that Allah is Omnipotent by virtue of His command over kingdom which He may confer on anyone and may seize it from anyone and that Allah is powerful enough to cause honour or disgrace to anyone who

may deserve so.

The Qur'an on the whole directs man to have a wide and scientific understanding of the nature and natural phenomena. It also encourages a first hand study of nature by observation and experimentation and inculcates a universal longing for scientific inquiry.¹⁶ It is this quality of observation, reflection and reasoning which the *Qur'ân* seeks to promote among the Muslims from the earlier times. During the medieval period the philosophical and scientific thinking got specially promoted through the discourses and writings of Muslim scholars. This legacy was inherited by the Muslim scholars of the later period who also enriched it by their scholarly contributions. Here we are making a brief review of their contribution to the scientific thinking and pursuits.

In this backdrop, the contribution of some prominent Muslim scientists, whom we find desirable to mention, over here, can be appreciated in an objective manner.

Mian Muhammad Afzal Husain (1889-1970 C.E.)

He was a pioneer Zoologist among the Muslims of the South Asia,¹⁷ who made a comparative study of the mandibles of crustacean (1918) and won the Charles Darwin Prize of the Christ College. On his return, he was entrusted various responsibilities - educational, administrative, advisory and others. He introduced the bee-keeping in the Agricultural College, Lyallpur. He also published notes on the porcupine and the fruit-eating bats or the flying foxes (1928-29). He initiated his research work on various aspects of Agriculture Entomology at the Punjab Agriculture College, Lyallpur (now University of Agriculture, Faisalabad) and studied the different aspects of the biology of the desert locust on the scientific lines. He experimented with the silk-worm breeding and studied the pests of the cotton and fruits. He also studied the habits of some birds in relation to the agriculture. In one of his

contributions, he concludes that the starling is a very useful bird for the farmer as it is insectivorous and helps to destroy the locusts. He points out that the parrot is a very harmful bird for the fruits. Because, besides eating away fruits from gardens, it destroys a good deal of the fruits aimlessly. He contributed as the vice-chancellor of the Punjab University for several terms since 1938.

Mr. Husain was a Fellow of various educational and scientific organizations. He was a Foundation Fellow of the National Institute of India, and an elected Fellow of the National Academy of Science, India. He was the President of the Agricultural Section of the Indian Science Congress in 1933, President of its Entomological section in 1938, and was elected as its General President in 1946. He is regarded as the *Father of Entomology* in the subcontinent. In Pakistan, he was elected as the First General President of the Pakistan Association for the Advancement of Science in 1948. He was a Foundation Fellow of the Pakistan Academy of Sciences and its first President for two successive years. He also contributed in the capacity of foundation fellow and the first President of the Zoological Society of Pakistan.¹⁸

Dr. Hamid Khan Bhatti (1895-1980 C.E.)

He initiated research at the Department of Zoology, Government College, Lahore as an M.Sc. student. He worked on the "*Skeleton of Rita Rita (Hamilton)*" and submitted his thesis to the university of the Punjab in partial fulfillment for the degree of M.Sc. (Zoology) in 1916. He worked on the integument and dermal skeleton of siluroides at the University of Cambridge and received his Ph.D. in 1936. The work was published in 1938. It is regarded as a comprehensive, valuable and outstanding work.¹⁹

Dr. Bhatti worked on various problems. He published his various articles on some vital aspects of pisciculture with special

reference to the Punjab state. His paper entitled, *Habits and Habitats of Food Fishes of the Punjab* (1934) is one of the most valuable contributions of its kind. After his Ph.D from the University of Cambridge, he again engaged himself in research on the fish and fisheries of Punjab in various capacities as Fisheries Research Officer, Punjab, upto 1939. He presented many papers at different sessions of the Indian Science Congress, Pakistan Science Conferences and others. His research publications deal with the habits, ovulation, parental care, methods of fishing, fish diseases, weight-length relationships, fish culture, fisheries legislation, conservation and development, stream pollution; exotic fishes, and catching and marketing of fish in Punjab. He was the first to induce fishes to spawn by the use of mammalian pituitary in south Asia. He also worked on the minute details of ovulation of *cirrhinus mrigala* (Hamilton) in 1938.

After retirement from the fisheries service, he joined the University of the Punjab as the Head of the Department of Zoology in 1948 and guided research on fish till his retirement in 1953. He joined the F.C. college, Lahore as Professor of Zoology in 1953 and retired in 1971. He visited the United States as a visiting professor of biology at Swarthmore College, Swarthmore, Pennsylvania (1962-63). Professor Bhatti also worked as the officer incharge of the "Soil Zoology Scheme" of the Pakistan Agricultural Research council from 1959 to 1962 and attended the colloquium on "Dynamics of Soil Communities" held at Braunschweig-volken Rode, West Germany in 1966. He published several papers on the biology of the earth worms of Lahore as well.

Professor Bhatti emerged as a Fellow of a large number of academic and scientific bodies in Pakistan and abroad. He was elected as the president of the biology section of the 3rd All Pakistan Science Conference in 1951 and delivered his presidential address entitled, Planning of Biological Research

in Freshwater Fisheries. In 1962, he was again elected as the president of the Biology section for the second time of the 14th All Pakistan Science Conference and delivered his presidential address on Soil Fauna and Soil Health. He was a Foundation Fellow of the Pakistan Academy of Sciences, and its president for the years 1972-73. He was also the Foundation Fellow of the Zoological Society of Pakistan, and its president for the years 1973-75.²⁰

Salim Moizuddin 'Abdul 'Ali (b.1896 C.E.)

He was a well-known ornithologist, who was born on November 12, 1896. He was the president of the Bombay Natural History Society and editor of its journal. He was also the Head of the University Department of Field Ornithology, Bombay Natural History Society, affiliated to the University of Bombay for research leading to the degree of M.Sc. and Ph.D. He was a fellow of the Indian National Science Academy and member of several other Scientific Organizations in India. He was an honorary member of the Ornithological Organization of Germany, France, United Kingdom and U.S.A. He had been awarded medals and prizes by many Indian and other organizations. He was a member of honour of the World Wildlife Fund.²¹ Salim Ali has travelled all over India on his bird-watching surveys. It is said that there is hardly a place in the country where his heavy rubber shoes have not left their mark.

Salim has a world renowned expert on weaver birds. He discovered Finn's Baya which was believed to have been extinct for 100 years until he discovered it in the Kumaon hills. He is a recipient of the J. Paul Getty Wild Life Conservation Prize for his contribution to ornithology²². For the first time in the history of ornithology, he noted how Sarus cranes mate, brood over their eggs, in turn, and how chicks are hatched and taken care of. He also observed one human quality in this bird: the parents love not only their eggs and chicks but also each other. He once

said, "My memoirs are a veritable gazetteer of natural history of the India of his day."²³ In 1941 he published *The Book of Indian Birds* that contained lively descriptions and coloured pictures of every species. It made spotting a bird easy for the layman.²⁴ He also published *Birds of Kutch* in 1945, *Birds of Sikkim* in 1962 and *Field Guide to the Birds of the Eastern Himalayas* in 1977²⁵. His excellent contribution entitled *Handbook of the Birds of India and Pakistan*, in 10 volumes was published in collaboration with S. Dillon Ripley (1968 – 1974), an ornithologist of international repute. This work contains all that is known of birds of the subcontinent, their appearance, their habitat, their breeding habits, migration and further scope of investigation.²⁶

Dr. Muhammad Babar Mirza (1898-1975 C.E.)

He joined the Osmania University, Hyderabad, Deccan as the Head of the Biology department. In 1926, the Nizam's Government sanctioned him an educational loan for the higher studies in Germany. In 1929, he received the degree of Doctor of Natural Philosophy (Dr. Phil. Nat.) from the University of Frankfurt and then returned back to the Osmania University. At the initiative of Sir Ross Masood – the then Vice-Chancellor of the Aligarh Muslim University – he joined the Department of Zoology, Aligarh Muslim University in January, 1930 as its chairman. He started the M. Sc. Classes in Zoology and the first batch passed out in 1932. He introduced the Postgraduate specialization in two important branches of Zoology – Helminthology²⁷ and Entomology.²⁸

Dr. Mirza was an outstanding helminthologist and made valuable contribution on the morphology, bionomics and epidomology of the guinea-worm (*Dracunculus medinensis Velch*). He also worked on the systematics of the nematodes and described many new species in collaboration with his associates. In 1956, Professor Mirza went to U.S.A. as a visiting

professor and worked at the University of Southern California at Los Angeles and Illinois University. There, in collaboration with Lary Roberts (1957), he propounded his famous theory of guinea worm zoonosis in United States. In 1961, after retirement from the Muslim University, Aligarh, he went to West Germany but there too he did not give up his love for research in Parasitology and continued to work on the systematics of Acanthocephala till his death in 1975.

He was a Fellow/Member of a number of Scientific Organizations including: Royal Microscopical Society, London; Zoological Society, London; Zoological Society of India; Indian Academy of Sciences; Institute of Sciences (India) and others.²⁹

Dr. Muhammad Rahimullah Quershi (1907-1977 C.E.)

He received the B.Sc. degree from the Aligarh Muslim University. In 1927 he joined as a Lecturer in Zoology at the Osmania University, Hyderabad (Deccan) and continued to work here upto 1940. He received his Ph.D. from the University of Madras on *Comparative Study of the Morphology and Probable Functions of the Pyloric Caeca in Indian Fishes Together with a Discussion of their Homology* (1945). He worked as the fishery Officer (incharge) in Hyderabad (Deccan) during 1940-48.³⁰

Dr. Quershi was an enthusiastic researcher and a prolific writer. In addition to more than 100 research publications, he was the author of several popular articles and books relating to fish and fisheries in Pakistan. The books were published in urdu as well as English. His publication entitled *Marine Fishes of Karachi and Coasts of Sind and Makran* (1955); *Pakistan's fisheries* (1961); *Common Fresh Water Fishes of Pakistan* (1965) and his presidential address, *Marine Fisheries of Pakistan-development and Research* in the 17th Pakistan Science Conference (1965) are basic sources of information on fish and fisheries in Pakistan. His last publication entitled,

Annotated Bibliography of Marine Fish and Fisheries was Published in 1980 Posthumously.

He was also a Fellow of various scientific organizations and was elected as president of the Zoological Society of Pakistan (1975-77).³¹

Dr. Sayyid Zahoor Qasim

He got early education at Allahabad and then at the Aligarh Muslim University, from where he obtained his M.Sc. degree in Zoology. He stood first in the order of merit for which he was awarded University Gold Medal. For a few years, he was a lecturer in the Department of Zoology at Aligarh before proceeding to the United Kingdom for higher studies in 1953. He returned to India in December of 1956 and joined the Department of Zoology at AMU as a Lecturer. He became Reader in 1957 and started a new laboratory of Fish and Fisheries in the Department. In 1962, he joined the Central Institute of Fisheries Education, Bombay (Mumbai) as a Professor of Fisheries Biology and in the year 1964 he moved to Cochin as Assistant Director in the Directorate of International Indian Ocean Expedition (IIOE) under the Council of Scientific and Industrial Research (CSIR). Here he extensively worked on biological oceanography especially on the primary productivity of Kerala Backwaters and on the atolls of Lakshwadeep. From 1970 to 1973, Dr. Qasim was the Director of the Central Marine Fisheries Research Institute at Cochin. He also held the additional charge of the Central Institute of Fisheries Technology, Cochin for about one year. In January 1974, he took over as the Director of the National Institute of Oceanography (NIO), Goa. In February 1976 he was responsible for the commissioning of the first Oceanographic Research Vessel Ganeshani for NIO. He initiated many new programs on the productivity of the Arabian Sea and Bay of Bengal. In May 1981, Dr. Qasim was appointed

Secretary to the Government of India in the Department of Environment (DOE) and within a year (April 1982) he took over as Secretary of the newly established Department of Ocean Development.³²

Dr. Qasim also served as a Fellow of the Indian National Science Academy, New Delhi, Indian academy of Sciences, Bangalore, National Academy of Sciences, Allahabad, among many others. Under his guidance nearly 40 students obtained their Ph.D. degrees from various universities in India.

He promoted new lines of work in Fisheries Biology and initiated the development of mussel culture and pearl culture techniques for the first time in India. This work earned him the prestigious award of "Padma Shri." He has been responsible for the acquisition of a second Oceanographic Research Vessel "Sagar Sampada" for the Indian Oceanographic research. Dr. Qasim led India's first expedition to the Antarctica and successfully organized and guided the other seven expeditions to the frozen continent from 1981 to 1988.

His work on Fisheries Biology, primary productivity, mariculture particularly mussel and pearl culture, estuarine ecology, environmental pollution and Antarctic research will always be quoted profusely. He has published more than 200 original research papers in national and international journals. For his original work and distinguished services, he won many honors and awards.³³

Sayyid Muhammad Naquib al-Attas

He was born on September 5, 1931 in Bogor, Java. He is a prominent contemporary Muslim thinker, who is thoroughly rooted in the Islamic sciences, theology, philosophy, metaphysics, history, and literature. He travelled extensively, drawn especially to Spain and North Africa where Islamic heritage had a profound influence on him. His formal primary education began at the age of 5 in Johor, Malaysia, but during

the Japanese occupation of Malaysia, he went to school in Java, in Madrasah Al-‘Urwatu’l-wuthqa. After World War II, in 1946, he returned to Johor to complete his secondary education. He received the M.A. degree with distinction in Islamic philosophy in 1962. Al-Attas went on to the School of Oriental and African Studies, University of London where he worked with Professor A. J. Arberry of Cambridge and Dr. Martin Lings. His doctoral thesis (1962) was a two-volume work on the mysticism of Hamzah Fansuri.

His vision is integrated, multi-dimensional and creative. To al-Attas’ philosophy and methodology of education have one goal: Islamization of the mind, body and soul and its effects on the personal and collective life of Muslims as well as others. He is the author of twenty-seven authoritative works on various aspects of Islamic thought and civilization, particularly on Sufism, cosmology, metaphysics, philosophy and Malay language and literature.

In 1987, with al-Attas as founder and director, the International Institute of Islamic Thought and Civilization (ISTAC) was established in Kuala-Lumpur. This institution strives for promoting an integrated study and research in Islam and aims to inculcate a special change into the consciousness of its students. Al-Attas envisioned the plan and design of every aspect of ISTAC, and has incorporated Islamic artistic and architectural principles throughout the campus and grounds. Al-Attas maintains that modern science sees things as mere things, and that it has reduced the study of the phenomenal world to an end in itself. Certainly this has brought material benefits; however, it is accompanied by an uncontrollable and insatiable propensity to destroy nature itself. Al-Attas maintains, as a firm critique, that to study and use nature without a higher spiritual end has brought mankind to the state of thinking that men are gods or His co-partners. “Devoid of real purpose, the pursuit of knowledge becomes a deviation from the truth, which

necessarily puts into question the validity of such knowledge.³⁴

Al-Attas views the Western civilization as constantly changing and 'becoming' without ever achieving 'being'. He analyzes that many institutions and nations are influenced by this spirit of the West and they continually revise and change their basic developmental goals and educational objectives to follow the trends from the West. He points to Islamic metaphysics which shows that reality is composed of both permanence and change; the underlying permanent aspects of the external world are perpetually undergoing change.³⁵

Al-Attas makes attempts to accommodate modern Western scientific spirit through a reinterpretation of Islam and to naively import Western technological skills and products while simultaneously keeping intact the traditional understanding of religion. Problems in the world, he says, are not because of illiteracy or ignorance of modern knowledge; the reasons are epistemological and metaphysical. Modern sciences must be acquired, but their philosophical foundations must be recast into the Islamic metaphysical framework. He asserts:

"We do affirm that religion is in harmony with science. But this does not mean that religion is in harmony with modern scientific methodology and philosophy of science. Since there is no science that is free of value, we must intelligently investigate and study the values and judgments that are inherent in, or aligned to, the presuppositions and interpretations of modern science. We must not indifferently and uncritically accept each new scientific or philosophical theory without first understanding its implication and testing the validity of values that go along with the theory. Islam possesses within itself the source of its claim to truth, and does not need scientific or philosophical theories to justify such a claim. Moreover, it is not the concern of Islam to fear

scientific discoveries that could contradict the validity of its truth. ³⁶

Islamic science must interpret the facts of existence in correspondence with the Qur'anic system of conceptual interrelations and its methods of interpretation, not the other way round. The role of science is to be descriptive of facts, and the facts undergo continual change by virtue of their underlying reality which is in process. Modern philosophy and science, in a secular way, consider change to be the ultimate nature of reality. Al-Attas maintains that reality is at once both permanence and change, not in the sense that change is permanent, but in the sense that there is something permanent whereby change occurs. Change does not occur at the level of phenomenal things, for they are ever-perishing, but at the level of their realities which contain within themselves all their future states.

Al-Attas advocates that the categories of knowledge which were fundamental to the Islamic tradition are fundamental to any realm of modern education. In the traditional Islamic worldview, knowledge was of two kinds, the open-ended *fard kifayah* knowledge, which includes the natural, physical and applied sciences, and the *fard 'ayn*, the absolute nature of the knowledge pertaining to God and the spiritual realities and moral truths. *Fard 'ayn* knowledge is not static, but dynamic, and it increases according to the spiritual and intellectual abilities as well as social and professional responsibilities of a person. Contemporary modern knowledge needs to be delivered from its interpretations based on secular ideology. This requires a critical examination of the methods of modern science; its concepts, presuppositions, and symbols; its empirical and rational aspects, and those impinging upon values and ethics; its interpretations of origins; its theory of knowledge; its presuppositions on the existence of an external world, of the uniformity of nature and of the rationality of natural processes;

its theory of the universe; its classification of the sciences; its limitations and inter-relations with one another of the sciences, and its social relations.³⁷ Science, according to Al-Attas, is a kind of *ta'wil* or allegorical interpretation of the empirical things that constitute the world of nature³⁸. The natural world is a book with knowledge; but that knowledge is not evident merely from the physical phenomena; they are nothing but signs, the meaning of which can be understood by those who are equipped with proper knowledge, wisdom and spiritual discernment. Some natural phenomena are obvious as to their meaning, while other natural things are ambiguous. The scientifically relevant verses in the *Qur'an* necessarily open themselves for further interpretation, based on the cumulative knowledge of future generations. He says that the fact that the early Muslims were not cognizant of the many scientific truths embedded in the *Qur'an* proves that the discoveries of these truths will not contradict its universal, spiritual and religious-moral teachings.

Sayyid Husain Nasr.

He was born in Tehran in the year 1933 C.E. After receiving his early education in Iran, Nasr studied physics and Mathematics at Massachusetts Institute of Technology (MIT) and received his doctorate from Harvard University in 1958 with specialization in Islamic cosmology and science. From 1958 until 1979, he was professor of the history of science and philosophy at Tehran University where he was also the Dean of the Faculty of Letters for some years. He also served as president of Aryamehr University in Iran. In 1962 and 1965, he was visiting professor at Harvard University, USA and in 1964-65 the first Agha Khan Professor of Islamic studies at the American University of Beirut. He was the founder and first president of the Iranian Academy of Philosophy. In 1979, he migrated to the United States and taught at several American universities before finally joining the George Washington University,

Washington DC in 1984. In 1999 he was chosen to be the first Muslim scholar to receive the Templeton Religion and Science Course Award.³⁹

Sayyid Nasr has written a number of books and articles on the relation between religion and science in general and Islam and science in particular. He has also been a pioneering figure on the relation between religion, science, and the environmental crisis. His famous works include:

1. *An Introduction to Islamic Cosmological Doctrines*

This is his doctoral dissertation, which appeared first in 1964. It is the first modern book devoted to the study of Islamic cosmology. In its Introduction, Nasr discusses three prominent figures of Islamic science and their approach to the study of nature.

2. *Science and Civilization in Islam*

It was first published in 1968, this work has brought the concept of 'Islamic science' to the fore with full force.⁴⁰ This work has remained unsurpassed as the authoritative statement on its subject. With his characteristic breadth of learning, clarity of exposition and insight, S. H. Nasr presents here, for the first time, a full picture of Islamic science, not as a chapter in the history of Western science, but as an integral aspect of Islamic civilization and the Islamic intellectual tradition. By means of an historical presentation, an analysis of its forms, including the use of passages from the writings of many Muslim scientists and philosophers, the author is able not only to convey a sense of the operative context of Islamic science but demonstrate its interrelatedness with the sapiential wisdom on which it is based. An introductory chapter provides the reader with a necessary orientation to the subject

according to the principles of Islam, while subsequent chapters survey the whole spectrum of the individual sciences from cosmology, philosophy, theology to alchemy, physics, mathematics, astronomy and medicine concluding with a chapter on the gnostic tradition.⁴¹

Nasr discusses the meaning of science within the context of Islamic religious worldview and analyzes the achievements of Islamic scientific tradition in such fields as medicine, astronomy, mathematics, algebra, chemistry, physics, geography and natural history. The book is based on the original sources and remains one of the best compendia of science in the Islamic civilization.⁴² According to him, Islamic Sciences in their essence can be understood only within the principles derived from the source of revelation which is the *Qur'an* and any study outside it would remain superficial and incomplete.

3. *An Annotated Bibliography of Islamic Science*

Nasr compiled it in three volumes with William Chittick. It is a dexterous presentation of the available material on the history of Islamic science.

4. *Islamic Science: An Illustrated Study*

It is Nasr's most famous work on Islamic science. It is the first of its kind in presenting Islamic science, its philosophical premises, its history and development with beautiful visual material, pictures, and diagrams. He argues convincingly that Islamic science had a distinct identity and displays its unique Islamic character.

5. *Islamic Life and Thought* (1981)

Here Nasr discusses inner nature of a person. He places religion above reason. Religion should define goals of a Muslim and all his affairs should

then be orientated in accordance with those goals. The modern reformers must reform science, society, state, religion and everything by putting their inner houses in order⁴³. They must be well-equipped with the religious knowledge.

6. *The Young Muslim's Guide to the Modern World* (1993)

It was written specifically for young Muslims, urging them to become familiar with their religion and gain an understanding of the modern world from the Islamic point of view in order to respond positively to its challenges. This guide, the first of its kind in any language, presents an exposition of the teachings of Islam as revealed in the *Qur'an*, explained in the *Hadith* and *Sunnah* of the Prophet Muhammad (SAAS) and commented upon by Muslim scholars and thinkers, as well as outlining the Western religious and intellectual tradition.

7. *The Encounter of Man and Nature: The Spiritual Crisis of Modern Man*

This book was published in 1968. It is his early work, and was one of the first books to forecast the catastrophic consequences of the environmental crisis. The book is a philosophical critique of the modern conception of nature as inert matter to be conquered and usurped by modern science and technology. This is also the first book in which Nasr takes up the challenges of modern science and its secular outlook.

8. *Religion and the Order of Nature*

It was published in 1996. Here Nasr gives an account of the rise of modern science on the one hand, and the critique of secular and reductionist philosophies concerning nature, on the other. The book also attempts to revive the sacred notion of

- nature and traditional cosmology with which Nasr has been occupied throughout his intellectual career.
9. *Knowledge and the Sacred* (1981) and *The Need for a Sacred Science* (1993)

These are the two most important books in which Nasr has tried to revive sacred science⁴⁴ by showing the underlying unity and interrelatedness of the transmitted, intellectual, and physical sciences under the umbrella of metaphysics. He writes in *Knowledge and the Sacred*:

Most of the major discoveries of physics since Einstein's (1905) theory of special relativity was announced have been the result not of induction or empirical observation but the consideration of aesthetic factors, search for unity, symmetry, and harmony. How often have well-known physicists proposed a theory which they have supported because it was mathematically speaking more "elegant"? Why is there this search for unity in the study of the laws of nature and, in fact, the attainment of ever greater or higher stages of unity? What about the appeal of Einstein in 1905 and Dirac in 1929 to symmetry, leading respectively to the special theory of relativity and anti-matter, long before experimental evidence could be provided? Finally, how can one evaluate the so-called Pythagorean period of modern physics covering the era from Bakr to de Broglie, when very important contributions based on Pythagorean harmony and with full knowledge of musical harmony were made to modern physics? ⁴⁵

Dr. Nasr reminds that metaphysical principles can never be proven through physics. The ultimate significance of physics can be grasped only through metaphysics. He defines Islamic Science as the systematic study of natural phenomena within the context of the Islamic worldview,

at the heart of which lies the doctrine of *tawhid*, Divine Unity.

Taking the Scientific Revolution of the 16th and 17th centuries C.E. to be a turning point in the history of Europe, Nasr focuses on the process of the gradual demise of Christian thought and the rise of the secular view of the universe, and argues that the rise of modern science is not the result of some groundbreaking discoveries in scientific measurement and instruments but rather of a radical change in the worldview of modern man that emerged in Europe after the 16th century C.E. To substantiate this view, Nasr identifies six dominant traits of modern science.

- I. **Secular view of the universe:**
This view sees no traces of the Divine in the natural order. Consequently, the teleological view of the universe, shared by all traditional civilizations, is rejected by modern science.
- II. **Mechanization of the world:**
Since modern science and philosophy claim to explain everything away in terms of scientific and rational analysis, the universe had to be constructed as a machine so that it would lend itself to the precise methods of analysis and measurement of modern physical sciences.
- III. **Rationalism and Empiricism:**
These are the only reliable methods of arriving at truth. In spite of deep contradictions between the two, the secular and reductionist methods of philosophical analysis are shared by both schools.
- IV. **Legacy of Cartesian dualism:**
The legacy of Cartesian dualism presupposes a complete separation between the knowing subject and the object to be known. One of the conspicuous results of this separation is the epistemological and

spiritual alienation of man from his natural environment and, in fact, from everything that may become the object of his knowledge.

V. Promethean view of Man:

This view construes man as the measure of all things. Nasr contrasts with what he calls the "Pontifical man", i.e., man as a bridge between heaven and earth.

VI. Exploitation of Nature:

It is as a source of power and domination, which was the driving force behind the Industrial Revolution and the rise of capitalism.

Taken together, Nasr argues that these six postulates constitute the philosophical framework of modern secular science, which has led to scientism and demise of the sacred view of the cosmos on the one hand, and to such modern disasters as the environmental crisis and nuclear warfare on the other.

Dr. Taha Jâbir al-Alwani (b.1935 C.E.)

He received his primary and secondary education in his native land and then graduated with an Honors Degree from the College of *Shariah* and Law at Al Azhar University in Cairo in 1959. From the same university he was awarded his Master's Degree in 1968 and a Doctorate in *Usul al-Fiqh* in 1973. For ten years (from 1975 to 1985) Dr. Alwani was a Professor of *Fiqh* and *Usul al Fiqh* at Imam Muhammad ibn Sa'ud University in Riyadh.⁴⁶

Dr. Alwani participated in the foundation of the International Institute of Islamic Thought (IIIT), in 1981, and was later designated as the Institute's President and a member of its Board of Trustees. He is a founder-member of the Council of the Muslim World League, Makkah, a member of the OIC, Islamic Fiqh Academy, Jeddah, since 1987, and President of the Fiqh Council of North America since 1988⁴⁷. Dr. 'Alwani

has been a regular contributor to the *American Journal of Islamic Social Sciences* and a keen observer of intellectual trends throughout the Muslim world. He is one of the prolific writers on various aspects of Islam. His prominent scholarly works include;

1. *al-Mahsul fi 'ilm Usul al-Fiqh*
2. *Contemporary Islamic Cultural Undertaking*
3. *The Horizons of Change and its Approaches.*
4. *Crisis in Fiqh and the Methodology of Ijtihad*
5. *The Ethics of Disagreement in Islam*
6. *The Rights of the Accused in Islam*
7. *Linking Ethics and Economics: The Role of Ijtihad, in the Regulation and Correction of Capital Market and Source Methodology in Islamic Jurisprudence.*
8. *An Epistemological Perspective on the Political Dimensions to the Concept of Sovereignty.*
9. *Taqlid and the Stagnation of the Muslim Mind.*
10. *The Testimony of Women in the Law of Islam.*
11. *The Islamization of Knowledge: Yesterday and Today.*⁴⁸

References and Notes

1. *Al-Qur'an*, 2:30.
2. The collective name for all the laws of Islam.
3. *Al-Qur'an*, 31:20. "Do you not see that Allah has made subservient to you whatever is in the heavens and whatever is in the earth and lavished on you His visible and unseen favours?"
4. Isma'il Al-Bukhâri, *Sahih Al-Bukhari*. Riyâd, Saudi Arabia, Maktab Dar-us-Salam, 1994, vol.6, Hadith no. 298.
5. *Al-Quran*, 31:20.
6. Sulaman bin Ahmad Al-Tabrâni, *Al-Mu'ajim Al-Kabir*, Bîrut, Daru Al-Ahya' wa Al-Turath, 1986, vol. 10, Hadith No. 10439. See also the 'introduction' to Ibn Majah's Sunan; *Bahar al-Anwar*, vol. I, p. 177.
7. *Al-Qur'an*, 6:11.
8. Man has been commanded to observe whatever is (visible) in the heavens and the earth (*Al-Qur'an*, 10:101). He has been persuaded to look into the processes of the growth of food grains (*Al-Qur'an*, 81:24-32) and the flight of birds during which they expand and contract their wings (*Al-Qur'an*, 67:19). In order to discover a fact reflecting over whatever has been observed is essential. The significance of reflection has been stressed in the *Qur'an*. A number of physical processes mentioned frequently in the *Qur'an* have been characterized as signs of Allah (S.W.T.) for those who reflect. For instance, the glorious *Qur'an* mentions: "Can the blind and the seeing be alike? Will you not ponder?" (*Al-Qur'an*, 6:50), "And in the earth are tracts (diverse though) neighbouring, and gardens of vines and fields sown with corn, and palm trees - growing out of single roots or otherwise: watered with the same water, yet some of them We make more excellent than others to eat. Behold, verily in these things there are signs for those who understand!" (*Al-Qur'an*, 13:4), "They have hearts wherewith they understand not, eyes wherewith they see not, and ears wherewith they hear not. They are like cattle, - nay more misguided: for they are heedless (of warning)" (*Al-Qur'an*, 6:179) and "Have they not done tafakkur (pondered) upon themselves? Allah did not create the heavens and the earth, and that which is between them, except with (the purpose of) truth and for an appointed term (*Al-Qur'an*, 30:9).

9. *Al-Qur'an*, 2:164.
10. *Ibid.*, 22:46.
11. *Ibid.*, 16:12.
12. *Ibid.*, 21:22.
13. *Ibid.*, 35:9.
14. *Ibid.*, 39:62.
15. *Al-Qur'an*, 3:25-26.
16. Khwaja Abdul Waheed, *Islam and the Origins of Modern Science*, Lahore, Islamic publications Ltd., 1978, p. 8.
17. Dr. Mohammad R. Mirza Muhammad Iqbal Siddiqi (ed.), *Muslim Contribution to Science*, Delhi, New Era Publishers, 1997, p.36.
18. *Ibid.*, p.36-37.
19. *Ibid.*, p.37.
20. *Ibid.*, p.37-38.
21. *Ibid.*, p.39.
22. Ornithology is the study of birds. India has the credit of having eminent ornithologists who are Muslims. Mughal Emperor Jahangir was an expert ornithologist. Jahangir described with care and accuracy various characteristics of animals and birds, their geographical distribution and behavior. In 1958 there was sensation in the world of ornithology when a Russian researcher, A. Ivanov, discovered a portrait of the dodo, a large, non-flying pigeon-like bird which had become extinct about three centuries ago, in a collection of paintings at the Institute of Orientalists of the Soviet Academy of Sciences. There was nothing to identify the painter, but the style was without doubt of Ustad Mansur, the court painter of Jahangir. Now, there is other evidence to show that it was the portrait of a Mauritius dodo which a merchant had presented to the Emperor around 1624.
23. www.irfi.org, s.v. "Contribution of Muslim Scientists to India"
24. *Idem*
25. Dr. Mohammad R. Mirza Muhammad Iqbal Siddiqi (ed.), *op.cit.*, p.39.
26. www.irfi.org, *loc.cit.*
27. The scientific study of parasitic worms.
28. Dr. Mohammad R. Mirza Muhammad Iqbal Siddiqi (ed.), *op.cit.*, p.40.
29. *Ibid.*, p.40-41.
30. *Ibid.*, p.43.
31. *Ibid.*, p.43-44.

32. www.irfi.org, *loc. cit.*
33. *Idem*
34. Syed Muhammad Naquib Al-Attas, *Islam and Secularism*, Kuala Lumpur, International Institute of Islamic Thought and Civilization (ISTAC), 1993, p.36.
35. *Ibid.*, p.82.
36. Syed Muhammad Naquib Al-Attas, *Prolegomena to the Metaphysics of Islam: An Exposition of the Fundamental Elements of the Worldview of Islam*, Kuala Lumpur, International Institute of Islamic Thought and Civilization (ISTAC), 1995, p.38.
37. Syed Muhammad Naquib Al-Attas, *op.cit.*, p.114.
38. Syed Muhammad Naquib Al-Attas, *Islam and the Philosophy of Science*, Kuala Lumpur, ISTAC, 1989, p. 116.
39. www.cis-ca.org, s.v. "Sayyid Hussain Nasr"
40. *Idem*
41. www.kitaabun.co.uk, s.v. "Sayyid Hussain Nasr"
42. www.cis-ca.org, *loc.cit.*
43. S. H. Nasr, *Islamic life and Thought*, Lahore, Pakistan, Suhail Academy, 1985, p. 153-155.
44. Releating to science or knowledge.
45. S. H. Nasr, *Knowledge and the Sacred*, Edindurgh University, 1983, p.155.
46. <http://www.islam-democracy.org>, s.v. "Dr. Taha Jabir al Alwani"
47. *Idem.*
48. www.islamonline.net. s.v. "Dr. al 'Alwani.

