

Contemporary Issues in Islam and Science

Volume 2

Edited by
Muzaffar Iqbal



Islam and Science: Historic and Contemporary Perspectives

Contemporary Issues in Islam and Science

Islam and Science: Historic and Contemporary Perspectives

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Contemporary Issues in Islam and Science

Volume 2

Edited by

Muzaffar Iqbal

Center for Islam and Science, Canada

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The four volumes in this series owe a great deal to the painstaking work of a small group of historians of science who have studied numerous manuscripts, treatises, and instruments over the last four decades and whose work has been instrumental in revising our understanding of the Islamic scientific tradition. This series was made possible by their vigor and insights. It provides new perspectives on Islamic scientific tradition by presenting their work in a certain thematic order. I am grateful to all the authors and researchers whose work is included in this series.

I wish to express my love and thanks to my son, Basit Kareem Iqbal, whose thoughtful critique of the four introductions has been helpful in reformulating certain arguments. His interest in various academic debates on themes related to Islamic scientific tradition and attention to detail and academic rigor has been inspiring.

Needless to say that only I am responsible for the shortcomings in selection or presentation. A work of this nature cannot be free of editorial biases, even though one tries to present a balanced view of the fields. One hopes, nevertheless, that this series provides a broad spectrum of views on various aspects of Islamic scientific tradition and contributes to a richer understanding of the field in some small way.

Wuddistān

9 Dhūl-hijja, 1432/5 November 2011

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Introduction

This second volume of the series *Islam and Science: Historic and Contemporary Perspectives* complements the selection of Volume I, further explores the Islam and science nexus in the post-1950 era, and broadens the conceptual categories needed for a better understanding of the making of the contemporary discourse. Like all intellectual work, the discourse on Islam and science has not existed in isolation from its social and political contexts; it is difficult to isolate various strands of the discourse which crisscross, mesh together, and weave a pattern that has only attained a certain degree of differentiation in the last three decades. As mentioned in the introduction to the first volume of this series, the contemporary discourse on Islam and science continues to be overdetermined by the colonial conditions under which it began. To be sure, some of the confusion and psychological investment in this discourse could have been checked at its nineteenth-century inception by the Islamic intellectual tradition had it not then been experiencing its lowest ebb. While the Muslim world has gained a certain degree of political independence in the years since World War II, it continues to suffer from economic, cultural, and intellectual dependence on the Western world, and its sudden ushering into modernity has been accompanied by violence and trauma. All of these have had a major impact on the nature of the discourse on Islam and science.

The most important of the institutions of Islamic civilization destroyed during the colonial era were those related to education and research, which were completely uprooted from their natural environment. The rapid invasion of modern science and technology into the Muslim world, where most people still lived in the age of animal-drawn ploughs until the middle of the twentieth century, and the sheer magnitude of the resultant transformation of the physical, intellectual, and cultural landscape of the Muslim world has also contributed to the making of the discourse in the post-colonial era. The sudden appearance of modern highways, railways, airports, telephones, oil refineries, and the Internet in deserts where until recently only camel riders travelled under the vast star-strewn skies could not but influence the way science and technology were perceived and linked to Islam. The arrival of new tools and techniques in a world unfamiliar with the scientific principles that gave birth to them is a process that has far-reaching consequences, as Werner Heisenberg (1901–76) once remarked (1958, p. 28). No doubt, the impact of modern technology on Western civilization has not been minor either, but, as Heisenberg suggested:

in those parts of the world in which modern science has been developed, the primary interest has been directed for a long time toward practical activity, industry and engineering combined with a rational analysis of the outer and inner conditions for such activity. Such people will find it rather easy to cope with the new ideas since they have had time for a slow and gradual adjustment to the modern scientific methods of thinking. In other parts of the world these ideas would be confronted with the religious and philosophical foundations of native culture'. (ibid.)

II

Although periodizing the Islam and science relationship is a fraught project (as well demonstrated by attempts to date the historical decline of Islamic science; see Volume III of this series), it is possible to heuristically mark 1950 as a turning point in the modern discourse on the topic. During the pre-1950 era, the most important aspect of the modern Islam and science discourse involved the use of Islam as a justification for acquiring modern science; post-1950, this initial casting was buttressed by the involvement of the states newly formed from colonial territories and which enthusiastically took on the reformers' agenda. This is evident from the fact that, soon after their independence, almost all Muslim states started to send their best minds to their former colonizers or to the United States of America to 'acquire' such science. 'Science and technology' became the buzz words in development strategies, often with devastating results for the overall development of the country. Ministries of science and technology were established to prepare official policies aimed at raising scientific output, large sums of capital were designated for the establishment of new institutions for scientific research, and the mass media was used to show links between Islam and modern science.

During the 1980s, when certain Muslim countries experienced a windfall through oil revenues, the discourse took on a new coloration by state-sponsored research on the so-called scientific miracles of the Qur'ān. The most vibrant of these new institutions was the 'Commission for Scientific Miracles of Qur'ān and Sunnah,' established in Saudi Arabia by the World Muslim League with six goals and objectives:

- (i) To lay down governing rules and methods [for studying] scientific signs in the Holy Qur'ān and Sunnah;
- (ii) To train a leading group of scientists and scholars to consider the scientific phenomena and the cosmic facts in the light of the Holy Qur'ān and Sunnah;
- (iii) To give an Islamic Character to the physical sciences through introducing the conclusion of approved researches into the curricula of the various stages of education;
- (iv) To explain, without constraint, the accurate meanings of the Qur'ānic verses and the Prophet's Traditions relating to Cosmic Sciences, in the light of modern scientific finds, linguistic analysis and purpose of Shariah;
- (v) To provide Muslim missionaries and mass-media with Dawah;
- (vi) To publicize the accepted researches in simplified forms to suit the various academic levels and to translate those papers into languages of the Muslim world and the other living languages. (as-Sawi, 1992)

The Commission has published about twenty books so far, all dealing with the 'scientific miracles' of the Qur'ān in such varied fields as embryology, botany, geology, astronomy and cosmology. The Commission also organized five major international conferences between 1987 and 2000 in various countries, including Pakistan, Jordan and Lebanon.¹ These involved splendid ceremonies, princes, high officials of Arab kingdoms and states, and Western scientists

¹ In due course, these conferences have covered all verses of the Qur'ān that have any relevance to various branches of science such as embryology, geology, and medicine. The audiovisual recordings of these conferences are available on scores of websites and numerous books have been published in various languages that use material from these conferences.

who were given royal treatment in exchange for verifying the ‘miracles’. These scientists were provided specific ‘scientific verses’ of the Qur’ān and were asked to demonstrate their scientific validity. The result was the emergence of a pseudo-scientific hermeneutics that generated tremendously popular apologetic material which tried to prove the scientific correctness of the Qur’ān on the authority of great Western scientists and its Divine authorship. A famous case is that of the Canadian embryologist Keith Moore, who was a regular keynote speaker at such conferences during the 1980s. His textbook on embryology, *The Developing Human*, was published by the Commission with ‘Islamic Additions: Correlation Studies with Qur’ān and Hadith’. In the foreword to this edition, Moore wrote:

I was astonished by the accuracy of the statements that were recorded in the 7th century AD, before the science of embryology was established. Although I was aware of the glorious history of Muslim scientists in the 10th century AD and of some of their contributions to medicine, I knew nothing about the religious facts and beliefs contained in the Qur’ān and Sunnah. It is important for Islamic and other students to understand the meaning of these Qur’ānic statements about human development, based on current scientific knowledge. (Moore, 1982, p. 10)

During the Seventh Medical Conference held by the Commission at Dammam, Saudi Arabia, in 1981, Moore said: ‘it has been a great pleasure for me to help clarify statements in the Qur’ān about human development. It is clear to me that these statements must have come to Muhammad from God, because almost all of this knowledge was not discovered until many centuries later. This proves to me that Muhammad must have been a messenger of God.’ During the question session, when Moore was asked, ‘Does this mean that you believe that the Qur’ān is the word of God?’ he replied, ‘I find no difficulty in accepting this.’ The applause one hears after this remark is a resounding indication of how pleased Moore’s audience was by his ‘verification’ of the Book. In the post-9/11 days, however, almost all the Western scientists who had repeatedly participated in these conferences claimed that they had been ‘manipulated’ and that their comments, taken ‘out of context’, sounded ‘silly and embarrassing’ (Golden, 2002). Despite the fickleness of this effort, thousands of websites continue to propagate this strand of the discourse.

A precursor to this apologia was the work of French physician Maurice Bucaille, who became the family physician of King Faisal of Saudi Arabia. Bucaille’s enormously popular book, *La Bible, le Coran et la science*, first published in 1976, has been translated into every language spoken in the Muslim world and thousands of websites refer to it as the authoritative reference establishing the scientific validity of the Qur’ān.² Bucaille attempted to show that the Qur’ān contains scientifically correct information about the creation of the heavens and earth, human reproduction, and certain other aspects of the natural world – whereas the Bible does not, thereby affirming Islam’s supersession of Christianity (despite Europe’s historical ascendancy).

Bucaille’s work is also a forerunner to numerous other works that attempt to interpret the Qur’ān on the basis of modern scientific knowledge. In most of these works, the Qur’ānic

² Translated by Alastair D. Pannell and the author as *The Bible, the Qur’an, and Science: The Holy Scriptures Examined in the Light of Modern Knowledge*, this was first published in English in 1978 by the North American Trust Publications, Indianapolis, and has since been published in hundreds of pirated local editions all over the Muslim world.

vocabulary is often placed within the framework of modern science and its verses are interpreted to show the existence of ‘scientifically correct’ knowledge in the Qur’ān. The creation of the heavens and earth is a popular theme in this strand of Islam and science discourse. Certain verses of the Qur’ān are chosen to demonstrate that the Qur’ān foretold the occurrence of the ‘Big Bang’. The two most often cited verses are Q 21:30 and Q 41:11. The former states, *Do the disbelievers not see that the heavens and the earth were joined together; then We clove them asunder and We created every living thing out of water. Will they then not believe?* The latter reads, in part: *God turned toward the heaven and it was smoke ...* In the first verse, the two key Arabic words *ratq* and *fatq* are translated respectively as ‘fusing or binding together’ and ‘the process of separation’, and they are then correlated to scientific terms used in the Big Bang model (Bucaille, 1976, p. 149). Other verses pertaining to creation mention ‘six days’ during which the heavens and the earth and all that is between them were created by God. Six ‘days’ (*ayyām*) are shown, on the basis of a linguistic argument, to mean six indefinite periods of time. In itself, this interpretation is unproblematic, and appears supported by Qur’ānic usage of the term *ayyām*. However, Bucaille goes on to superimpose these verses onto specific data arising from specific strands of modern science. He also interprets the ‘smoke’ (*dukhān*) of Q 41:11 as ‘the predominantly gaseous state of the material that composes [the universe, which] obviously corresponds to the concept of the primary nebula put forward by modern science’ (ibid., p. 153). It is this one-to-one correspondence that begins to stretch Qur’ānic hermeneutics, as the entire enterprise remains motivated by a deep desire to reveal ‘science’ in the Qur’ān. ‘The existence of an intermediate creation between “the heavens” and “the earth” expressed in the Qur’ān may be compared to the discovery of those bridges of material present outside organized astronomic systems,’ writes Bucaille (ibid., p. 153). The foregone conclusion of this deductive approach toward the relationship between the Qur’ān and science is that, although not all the questions raised by the descriptions in the Qur’ān have been completely confirmed by scientific data, there is in any case absolutely no opposition between the data in the Qur’ān on creation and modern knowledge on the formation of the universe (ibid., pp. 153–4). Bucaille was building on the trends in Islam and science discourse already present in the nineteenth century, but his contribution received popular support (as the earlier work of Egyptian writers did not) perhaps because he was a European who fulfilled a psychological need of Muslims emerging from two centuries of colonization.

The attention received by Bucaille’s book produced reactions, including a Christian rebuttal by William Campbell entitled *The Qur’an and the Bible in the Light of History and Science* (1986). This work attempted to show the opposite of what Bucaille had set out to prove – that is, that the Qur’ān has it all wrong, while the Bible is sound. The works of Bucaille and Campbell are thus mirror images of one another, both employing a strained hermeneutics and labouring to meet a scientific burden of proof.

III

In addition to the strands described above, the post-1950 discourse saw the emergence of new aspects informed by the movement for ‘Islamization of knowledge’ led by Ismail al-Faruqi (1921–86), who sought to find an epistemological correction for modern knowledge. This movement was based on the premise that the root of the decline of the Muslim world was the ‘educational system, bifurcated as it is into two subsystems, one “modern” and the other

“Islamic” (al-Faruqi, 1982, p. viii). To redress this division, al-Faruqi sought to unite the two educational systems and to ‘Islamize’ knowledge. Al-Faruqi’s approach to the problem was premised on the supposition that earlier reformers in Muslim lands were unsuccessful in their efforts because they failed to understand the deep structural roots of modern knowledge. They assumed that

the so-called ‘modern’ subjects are harmless and can only lend strength to the Muslims. Little did they realize that the alien humanities, social sciences, and indeed the natural sciences as well were facets of an integral view of reality, of life and the world, and of a history that is equally alien to that of Islam. Little did they know of the fine and yet necessary relation that binds the methodologies of these disciplines, their notions of truth and knowledge, to the value system of an alien world. That is why their reforms bore no fruit (ibid.).

The solution to this ‘malaise of the Ummah’, as al-Faruqi conceived it, was, ‘in concrete terms, to Islamize the disciplines, or better, to produce university level textbooks recasting some twenty disciplines in accordance with the Islamic vision’ (ibid., p. 14). This idea led to the establishment of the International Institute of Islamic Thought (IIIT), which continues to pursue al-Faruqi’s vision. Al-Faruqi, however, was not interested in studying the epistemological foundations of modern science, and his plan made only passing references to the Islamization of the natural sciences. This may have inspired Ziauddin Sardar, a UK-based journalist of Pakistani origin, to imitate the Islamization of knowledge movement in that domain. He put together a loosely-knit group of friends, who called themselves ‘Ijmalis’, and initiated a new strand of the Islam and science discourse. (The work of these thinkers is included in Volume I of this series and the first section of the present volume.) Sardar’s major work on the subject, *Explorations in Islamic Science* (1989), was inspired by the previous decade’s worldwide surge of interest in Islam. During his research on the role of science and technology in the development of the Muslim World, he realized that many working scientists

felt that there were some problems between their religious ethics and their professional work as scientists. No one actually articulated the problem in any clear way – it was slipped in during complaints about how science is ignored, lack of funding, absence of adequate research facilities and so on. When posed a direct question, most scientists avoided talking about ethics in science or the notion of Islamic science. The explanation offered by a Turkish scientist placed this reluctance in perspective: ‘Obviously,’ he said, ‘I have my own opinion on the relationship between science and Islam, but I would not discuss the subject in my office or indeed at any scientific or public gathering. This would be the fastest way to lose the respect of one’s colleagues, become isolated and labeled as a fanatic. In fact, such a discussion would mean the end of my scientific career’ (Sardar, 1989, p. 1).

This situation was to change: ‘in less than five years,’ Sardar noted, ‘Muslim scientists were more assertive about their religious and ethical concerns’ (ibid., p. 2). What changed was their understanding of modern science. The first step toward the evolution of this strand of discourse was a realization by a number of Muslim scientists and thinkers that ‘while science itself is neutral, it is the attitude by which we approach science that makes it secular or Islamic’ (ibid.). Thus, according to Sardar, it was now asserted with increasing emphasis that science is intricately linked with ideology in its emphasis, scale of priorities, and control and direction of research. Sardar and his associates in the Ijmali group developed their discourse on the following assumption:

The purpose of science is not to discover some great objective truth; indeed, reality, whatever it may be and however one perceives it, is too complex, too interwoven, too multidimensional to be discovered as a single objective truth. The purpose of science, apart from advancing knowledge within ethical bounds, is to solve problems and relieve misery and hardship and improve the physical, material, cultural and spiritual lot of mankind. The altruistic pursuit of pure knowledge for the sake of 'truth' is a con-trick. An associated assumption is that modern science is distinctively Western. All over the globe all significant science is Western in style and method, whatever the pigmentation or language of the scientist. (Ibid., p. 6)

Working with these assumptions, Sardar then developed a foundation for his exploration:

Western science is only a science of nature and not *the* science. It is a science making certain assumptions about reality, man, the man-nature relationship, the universe, time, space and so on. It is an embodiment of Western ethos and has its foundation in Western intellectual culture. Different constellations of axioms and assumptions may lead the sciences of two different societies to highly divergent interpretations of reality and the universe, interpretations which may either be spiritual or materialistic according to the predisposition of the society. (Ibid.)

This approach thus recognizes that the Islam and science discourse is intimately connected with a host of other issues emerging from the Muslim encounter with modernity and that, in the broader context, it is also a search for a *modus vivendi* in a world dominated by modern science and technology.

The work of the Ijmalis developed insights into the concrete social, political, and economic realities of the Muslim world. For instance, Sardar perceived the real-life dilemmas of Muslim scientists who 'tend to propagate two different sets of values: one that is evident in their professional output and another that they cherish in their personal lives'; he attempted to explain this by categorically dividing the knowledge of Muslim scientists into operational and nonoperational forms (that is, their scientific training and Islamic values, respectively). 'Most Muslim scientists, therefore, suffer from an acute schizophrenia, the seeds of which are planted at the beginning of their [Western/scientific] education' (ibid., pp. 24, 26)

Sardar and his associates situated science in social and utilitarian realms, reducing it to being no more than a tool for 'solving problems and relieving misery'. However, higher science dealing with the structure of physical reality has no immediate utility: for instance, Einstein's four papers published in 1905 neither relieved misery nor did they solve practical problems; they had no impact on the nature of the hardship or physical and material lot of mankind, yet they fundamentally altered our concepts of mass, time, motion and light, leading to the emergence of a new kind of physics. Sardar and his group were not blind to this, but their emphasis lay elsewhere, on a culture-specific construction through which they could raise certain social issues. They built their critiques on the need for each civilization to produce its own specific kind of science within its own worldview – but the difference between the science of one civilization and that of another was to lie merely in terms of priorities of research, the utility of science, and the social prestige and salaries of scientists. The Ijmalis left out metaphysical considerations from their sociological discourse; in other words, they built an epistemology of science without any ontology.

Sardar identifies three elements of Islamic science: (i) humility; (ii) the recognition of the limitations of scientific method; and (iii) respect for the subject under study. This list, however, can be expanded to include other 'Islamic' elements such as reverence for the creation of

God, an attitude of care and preservation, demands for social justice, links between science and holistic progress, and so on, fundamentally modifying the enterprise of modern science. What Sardar and his associates failed to critique were the foundations on which the modern enterprise of science has emerged. Their discourse served to deconstruct myths of scientific superiority, produced an enhanced awareness of the enormous difference between the status of Western scientists and those working in the Muslim world, and vehemently rejected certain trends such as the aforementioned 'Bucallism'. (Sardar criticized such trends as 'dangerous' and traced them back to the psychological needs of some Muslims.) The Ijmali position seemed important during its heyday, but the power of its critique faltered as the freelancers associated with the group moved on to other matters during the 1990s.

IV

The discourse as surveyed thus far matured through inter-Muslim debates on the respective natures of 'Islamic' and 'non-Islamic' science. It was nourished through sustained reflection by some of the leading Muslim scholars of the twentieth century. As it developed, new questions were articulated:

- (i) What was 'Islamic' in Islamic scientific tradition before the rise of modern science?
- (ii) How does modern science differ from the historical Islamic enterprise of science?
- (iii) How does the concept of *tawhīd* (divine unicity), which is the heart of Islam, influence the study of the natural world?
- (iv) What are the implications of the subtle presuppositions of modern science in relation to the questions of the Beginning and the End of the physical world?
- (v) How does this understanding differ when viewed from Islamic perspectives?
- (vi) How are space, time, and matter understood in Islam and in modern science and how do such understandings influence the course of science?

These and similar questions have informed the contemporary discourse on Islam and science, which substantially differs from the earlier reformers' modernist discourse. These new dimensions opened paths to a metaphysical foundation that draws on the centuries-old Islamic tradition of reflection on the physical world from the perspective of its ontological dependence on the Creator, its relative position in the overall scheme of creation, its purpose, and its ultimate 'folding back', as it were, to its Originator. While exploring this strand of the contemporary Islamic discourse on science, we encounter a terminology that deals with the physical cosmos in terms of its sacrality, its inviolability, its ontological status, and its unfathomable links with higher realms of existence. Built on the insights of sages of previous centuries, this strand of Islamic discourse on modern science emerged through the work of a handful of scholars who are often called 'traditionalists' for their insistence that a legitimate philosophy of science can only be articulated through drawing upon the underlying and transcendent principles of 'traditional' metaphysics. Part II of the current volume presents work of some of these scholars. It also contains chapters on the views of certain pre-modern Muslim scholars in order to provide links with the theoretical foundation of the Islam and science nexus before the rise of modern science.

The traditionalists propose that one of the most important differences between the traditional sciences that studied the physical cosmos and modern science is that the traditional sciences derived their principles from revelation whereas modern science derives its principles from human reason. As a result, modern science has embarked upon the study of the physical cosmos in total disregard of its sacrality, and the results have been devastating for the planet and those who inhabit it. This discourse emphasizes notions of teleology and the symbolic and spiritual meanings of the physical entities that are the subject of modern science.

Built on the repository of metaphysical writings of Muslim scholars of previous centuries, this strand of the discourse on Islam and science attained its present form through the pioneering work of scholars including René Guénon (d. 1951), Frithjof Schuon (d. 1998), Titus Ibrahim Burckhardt (d. 1984), Martin Lings (d. 2005), and Seyyed Hossein Nasr (b. 1933). At a different level and in his own way, Syed Muhammad Naquib al-Attas (b. 1931) has also contributed to this discourse, which continues to inspire a new generation of thinkers. This approach is a marked departure from the attempts surveyed above to graft Islamic ethics and values onto modern science. Here the discourse is built upon a metaphysical framework of inquiry that constructs a concept of nature according to the primary sources of Islam. Concepts such as hierarchy, interconnectedness, isomorphism, and unity – which are built into the very structure and methodology of traditional sciences of nature – are used here to identify the dissonance of modern science with Islam. Seen from this perspective, modern science appears as an anomaly, ‘not simply because we have to pay a high price by destroying the natural environment, but because modern science operates within a seriously misguided framework in which everything is reduced to pure quantity and by which modern man is made to think that all of his problems, from transportation to spiritual salvation, can ultimately be solved by further progress in science’ (Kalin, Chapter 11, p. 280 below).

Critics of this approach often construe this discourse as being anti-science, archaic, nostalgic, and impractical. However, one does not find an ‘anti-science’ attitude in the original work of these writers. On the contrary, these writers often reassert the traditional view that the cosmos *must* be studied, due to its essential nature as a matrix of signs of the Creator. What they emphasize, rather, is that the framework of modern science is wholly unsuited to such study. The enterprise of modern science, and indeed the whole outlook of modernity as it has developed since the seventeenth century, is seen by the advocates of this discourse as a disastrous loss of the sacred. René Guénon and Frithjof Schuon, in particular, contrast the levelling functions of modern civilization with pre-modern, traditional civilizations, where the natural sciences existed as part of a harmonious hierarchy of knowledge that paid attention to the physical world in due proportion. They believe that modern science emerged through and as this hierarchy was broken and that it participated in the process that has plunged humanity into multiple and deep crises. This process, starting with the European Renaissance (the beginning of the ‘dark age’ of modernity), is understood by the traditionalists as when ‘a word rose to honour,’ a word ‘which summarized in advance the whole programme of modern civilization: this word is “humanism”’.

Men were indeed concerned to reduce every principle of a higher order, and, one might say symbolically, to turn away from the heavens under the pretext of conquering the earth; the Greeks, whose example they claimed to follow, had never gone so far in this direction, even at the time of their greatest intellectual decadence, and with them utilitarian considerations had at least never claimed the first place, as they were very soon to do with the moderns. Humanism was already the first form of

what has subsequently become contemporary laicism; and, owing to its desire to reduce everything to the measure of man as an end in himself, modern civilization has gone downwards step by step until it has ended by sinking to the level of the lowest elements in man and aiming at little more than satisfaction of the needs inherent in the material side of his nature, an aim which is, in any case quite illusory, as it constantly creates more artificial needs than it can satisfy. (Guénon, 1942, pp. 25–6)

Guénon understood the term ‘physics’ in its original etymological sense, meaning the ‘science of nature’ without any qualification; for him, it is a science that deals with the most general laws of ‘becoming’, for ‘nature’ and ‘becoming’ are really synonymous (*physis*); and it was thus that the Greeks, and notably Aristotle, understood this science. As opposed to this understanding, ‘the modern world has subjected the word “physics” to designate exclusively one particular science ... this process of specialization arising from the analytical attitude of the mind has been pushed to such a point that those who have undergone its influence are incapable of conceiving of a science dealing with nature in its entirety’ (ibid., p. 63).

This view of modern science gained further clarity in the lucid work of Frithjof Schuon. ‘Modern science, which is rationalist as to its subject and materialist as to its object,’ he wrote, ‘can describe our situation physically and approximately, but it can tell us nothing about our extra-spatial situation in the total and real Universe’ (1965, p. 111).³ This ‘total and real Universe’ is seen as beyond the reach of modern science, which is sometimes described as ‘profane science’ to distinguish it from sacred science:

Profane science, in seeking to pierce to its depths the mystery of the things that contain – space, time, matter, energy – forgets the mystery of the things that are contained: it tries to explain the quintessential properties of our bodies and the intimate functioning of our souls, but it does not know what intelligence and existence are; consequently, seeing what its ‘principles’ are, it cannot be otherwise than ignorant of what man is. (Ibid.)

The most representative voice of the traditionalist discourse on modern science specifically as it relates to Islam is that of Seyyed Hossein Nasr. Beginning with *An Introduction to Islamic Cosmological Doctrines* (1964), Nasr’s scholarly writings have explored various aspects of Islam’s relationship with science for almost half a century. His unique position in the Islam and science discourse stems from his thorough training and understanding of both modern Western science and traditional Islamic *ḥikma* (wisdom). His critique of modern science, as Ibrahim Kalin has summed up his position, identifies five main traits of modern science: (i) the secular view of the universe that sees no traces of the Divine in the natural order; (ii) mechanization of the world-picture upon the model of machines and clocks; (iii) rationalism and empiricism; (iv) the legacy of Cartesian dualism that presupposes a complete separation between *res cogitans* and *res extensa*, that is, between the knowing subject and the object to be known; and (v) exploitation of nature as a source of power and domination (Kalin, 2001, p. 453).

Further explaining his position on the ‘religious view of the cosmos’, Nasr rejects the

external understanding of religion prevalent today as a result of which this phrase means only the acceptance of God having created the world and the world finally returning to God. These truths

³ This work, translated by Lord Northbourne as *Lights on the Ancient Worlds*, was originally published in French in 1965 as *Regards sur les mondes anciens*.

are of course basic for understanding ‘the religious view of the cosmos,’ but they do not include all that this phrase implies. Rather, by ‘religion’ in the term ‘religious view’ here is meant religion in its vastest sense as tradition which includes not only a metaphysics dealing with the nature of the Supreme Reality or Source, but also cosmological sciences which see all that exists in the cosmos as manifestations of that Source, the cosmological sciences themselves being applications of metaphysical principles to the cosmic domain. The religious view of the cosmos relates not only the beginning and end of things in the external sense to God, but also studies all phenomena as signs and symbols of higher levels of reality leading finally to the Supreme Reality and all causes as being related ultimately to the Supreme Cause (Nasr, Chapter 11, pp. 297–8 below).

Part II of the present volume also presents an exposition of the philosophy of science of Syed Naquib al-Attas, who stands apart from the traditionalist school but who also shares some of their views. His writings on the relationship between Islam and science can best be understood within the integrated system of thought he developed by applying traditional Islamic philosophy to the contemporary situation. Examining science from the metaphysical perspective of Islam means a construction that takes into consideration the authority of revelation, sound traditions of the Prophet, and intuitive faculties granted humanity by the Creator. One key aspect of al-Attas’s views on modern science is the epistemological considerations he brings to the discourse. He observes that Islamic metaphysics and modern science are based on divergent foundations with regard to their respective positions concerning the sources and methods of knowledge. ‘It is implicit in al-Attas’s conception of science as “definition of reality” that “science” is to be understood in the wide sense of the term as any objective systematic inquiry, including the intellectual, psychological, natural, social and historical disciplines’ (Setia, Chapter 13, p. 334 below). In his opinion, modern science and philosophy suffer from a myopia that limits our understanding of reality. ‘God is not a myth, an image, a symbol, that keeps changing with the times,’ he wrote in his *Islam and the Philosophy of Science*, ‘He is Reality itself. Belief has cognitive content; and one of the main points of divergence between true religion and secular philosophy and science is the way in which the sources and methods of knowledge are understood’ (al-Attas, 1989, p. 3).

Al-Attas’s critique of modern science considers the denial of the reality and existence of God – which he considers an implied component of modern science – as the key source of all problems. Modern science conceives the existence of things in terms of their coming into being from other things, as a progression, a development or evolution. This perception of the world construes it as a self-subsistent system evolving according to its own laws:

The denial of the reality and existence of God is already implied in this philosophy. Its methods are chiefly philosophic rationalism...rationalism, both the philosophic and the secular kind, and empiricism tends to deny authority and intuition as legitimate sources and methods of knowledge. Not that they deny the *existence* of authority and of intuition, but that they reduce authority and intuition to reason and experience. (Ibid., p. 6)

V

As should be evident from the preceding survey of different strands of the Islam and science discourse, it is possible to categorize various approaches according to the emphasis they place on ethics, epistemology, or ontology. As Ibrahim Kalin explains,

The ethical/puritanical view of science, which is the most common attitude in the Muslim world, considers modern science to be essentially neutral and objective, dealing with the book of nature as it is, with no philosophical or ideological components attached to it. Such problems as the environmental crisis, positivism, materialism, etc., all of which are related to modern science in one way or another, can be solved by adding an ethical dimension to the practice and teaching of science. The second position, which I call the epistemological view, is concerned primarily with the epistemic status of modern physical sciences, their truth claims, methods of achieving sound knowledge, and function for the society at large. Taking science as a social construction, the epistemic school puts special emphasis on the history and sociology of science. Finally, the ontological/metaphysical view of science marks an interesting shift from the philosophy to the metaphysics of science. Its most important claim lies in its insistence on the analysis of the metaphysical and ontological foundations of modern physical sciences. (Kalin, 2002, p. 47)⁴

Part I of the present volume (Chapters 1–4) further attempts to formulate basic questions in the field.

Part II of the present volume (Chapters 5–13) is devoted to an in-depth exploration of some of the most important voices in the contemporary Islam and science discourse. It also contains three essays which link various conceptual strands of the discourse with the classical period, thus providing a historical depth. In this regard, special attention is given to the concept of the natural world as conceptualized by Fakhr al-Dīn al-Rāzī, who considered science of nature ‘the science which studies existents (*al-mawjūdāt*) that are constituted of matter (*al-mādda*)’, just as Ibn Sīnā (d. 1037) had done before him. As Adi Setia points out in here in Chapter 6, al-Rāzī defined physics ‘as that science whose subject matter is the body (*al-jism*) insofar as it undergoes change (*al-taghayyur*), and is in motion (*yataḥarrak*) and repose (*vaskun*). Hence, physical or natural science is the study of material bodies that undergo change and are either in motion or repose’ (p. 127 below). For Muslim scholars of the pre-modern era, the natural world was layered, connected, interdependent, and linked to higher realms, from whence came its principles. Several studies on the work of contemporary Muslim scholars in this section complement their own works represented in Volume I of this series.

The two chapters of Part III of the volume (Chapters 14 and 15) explore fundamental questions in the discourse, but from the perspective of sacred cosmology: How did the cosmos come into existence? When? Is there an end to this beginning? These articles do not deal with modern science per se, but with the sacred cosmology based on the Qur’ānic view of creation of physical objects, some of which are studied by science, while others – such as the Guarded Tablet, the Pen, the Throne, and the Footstool – are understood to lie beyond the realm of science. These aspects of cosmology may seem irrelevant to the study of the natural world proper, but must be considered in order to appreciate the Islamic interweaving of different levels of creation and existence. The relationship between lower and higher realms is a *sine qua non* for the existence of the physical world at the lower plane of existence.

Part IV (Chapters 16–18) presents a new and emerging field devoted to operationalizing the theoretical formulations that have been articulated over the last fifty years. In many ways, this section complements Part IV of Volume I of this series by extending the scope of the quest for the revival of Islamic scientific tradition to new areas including science education and mathematics. Critics of such Islamic perspectives on science often ask how ‘Islamic science’

⁴ Kalin’s essay ‘Three Views of Science in the Islamic World’ is reprinted in Volume I of this series.

would actually differ from modern science, especially since there is currently no place on earth where the enterprise of science is rooted in the Islamic view of the physical world. What is being done in the name of science in Makkah is no different than what is being done in Washington, DC, or Moscow, or Berlin. Indeed, there is not even a fully developed theoretical framework for the teaching of science from an Islamic perspective. This challenge has become the focus of work of many Muslim scholars and it may well be the main thrust of the Islam and science discourse in the years to come. This final section of the volume thus provides some contours to this aspect of the discourse and points in the direction of future research.

Wuddistān

14 Shawwāl 1432/12 September 2011

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Part I

Formulating Questions on
Islam and Science Nexus

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[1]

Where's Where? Mapping Out The Future of Islamic Science (Part-I)

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While examining various schools of thought in the contemporary discourse on Islamic Science, the author refers to four schools and discusses their ideological positions and intellectual stands. In this part of his essay the author elaborates on Guenon/Schuon school of thought represented by S.H. Nasr. It is infact a fusion of the Ismaili esoterism with the Guenon/Schuon philosophy based on esoteric and sapiential teachings of Platonism, Vedanta, Sufism and Buddhism. The author's stand is that their views have nothing to do with Islam as claimed by their protagonists in the literature produced by them.

In the development of every discipline, from time to time, points are reached when it becomes necessary to critically examine the stock of accumulated ideas, look at the parameters within which the discourse on the discipline has meaning and significance and study the direction towards which the discipline is moving. The nascent discipline of Islamic science has, over the last decade, produced a body of ideas and criticisms as well as cherished positions and metaphysical expositions which need to be examined throughly if the direction that the discipline is taking is to be delineated. At this juncture in the hisotry of the contemporary development of this discipline, scholars find themselves in a circular bind: the same arguments are repeated again and again, positions are restated without regard for the counter-

arguments and the weight of evidence that is brought against them, and an overall sense of direction is only conspicuous by its total absence.

In this paper, I intend to examine the ideas of various contemporary 'schools of thoughts' which are taking part in the discourse rather loosely defined as 'Islamic science' and delineate the future direction towards which I think the discourse and discipline should be moving.

Ticket to Ride

At least three recent papers have tried to develop a typology of positions within the discourse in Islamic Science.¹ However, these typologies attribute beliefs and positions by drawing similarities between the approaches of various authors without making their positions clear or developing appropriate correlation between their approaches. If we attribute beliefs simply by drawing superficial similarities between authors we end up producing strange assimilations. For example, because Seyyed Hossein Nasr, Parvez Manzoor, Munawar Ahmad Anees and myself consider western science to be culturally biased and value-laden, Mohammad Zaki Kirmani assumes that the approaches of Nasr and the other three are the same;² in fact, the differences between these approaches are so fundamental that they constitute two totally different ways of looking at science, indeed even the notion of science in the two approaches are totally different. Again, M. Kaleemur Rahman assumes that because both Nasr and I have justified the use of the term 'Islamic science' we are in fact talking about the same thing³; not just our justifications come from radically different perspectives, but the mould in which we cast Islamic science are also totally different.

The imputation of beliefs should be based on a critical examination of the text of an author, indeed, not just a single work but where possible an entire *oeuvre*. Creative minds do not remain static, they grow, they learn not just from their own experience but more so from the arguments and evidence brought forward by others. An *oeuvre* of an author therefore may reveal changes in position. However, much more interesting than attributing beliefs to individual authors, is the imputation of beliefs to group of authors⁴. Our imputation of beliefs to group of scholars or schools of thought assumes that individuals, and their affirmations and utterances, express intellectual positions which are borne by the group to which they belong. While there is no such metaphysical entity as a group mind which thinks over and above the heads of the individual, or whose ideas the individual merely reproduces,

nevertheless it would be false to deduce from this that all the ideas and the sentiments which motivate an individual have their origin in him alone, and can be explained solely on the basis of his own life-experiences.

Can we attribute positions to a group of scholars randomly or is there a more reasonable way of ascribing intellectual stands? One obvious criterion is where the members of the relevant group are willing to affirm the attributed position as their own and demonstrate the use of ideas in their work. This criteria is met by two groups of scholars who are taking an active part in the discourse on Islamic science. The first consists of Hossein Nasr and his followers, most notably Osman Bakar, who have produced a corpus of literature; I shall refer to them as the 'Guenon/Schuon' school of thought as they derive most of their ideas from the scholarship of Rene Guenon and Fritjof Schuon. The second school of thought describes itself as the group of *Ijmal*: the root work *jml* conveys the ideas of beauty on the one hand and wholeness on the other; *Ijmal* captures the substance of synthesis with the style of aesthetics. The name suggests this group seeks synthesis within a particular framework. On the discourse on Islamic science, three *Ijmalis* are well known: S. Parvez Manzoor⁵, Munawar Ahmad Anees⁶ and myself. The names of four others are also familiar to those who are aware of the existence of a new trend in muslim intellectual thought first introduced by the now defunct journal, *Inquiry*: Gulzar Haider⁷ Merryl Wyn Davies⁸, Mohammad Iqbal Asaria⁹ and Ibrahim Sulieman¹⁰. While the *Ijmalis* are a heterogeneous group, their intellectual position is united by a methodology of conceptual analysis, that can be seen in all their works, which aims at synthesis and future-oriented expressions of the values of Islam in all aspects of contemporary thought and life.

Group identity is not fixed to declared intellectual positions, objective interests and stated goals. It can also arise by the connection of a group of scholars to a particular institution. Scholars affiliated to an institution tend to work on similar problems and even though their individual positions may be different there is an overall unity to their work which comes from regular interchange of ideas and constant criticisms from colleagues. Thus in the sociology of knowledge, we have the noted Edinburg school of thought, attached to the University of Edinburg, which works on the relativist account of science, and at the opposite end the historic Vienna Circle which produced the original logical positivist stance on science. In the discursive field of Islamic science this position is held by the Aligarh school, based at the

Centre for Studies on Science in Aligarh, India, and consists of the group of scholars who contribute regularly to the *MAAS Journal of Islamic Science*. Once again the positions within the group vary, but there is unity in the overall concerns and emphasis of the group: the Aligarh is essentially a school of criticism of science, and most of its original ideas have emerged from criticisms of established positions, with a dominant concern for methodology. This group includes Mohammad Zaki Kirmani, Mohammad Riaz Kirmani, M. Kaleemur Rahman and Rais Ahmad.

Finally, group identity can also emerge as an outcome of discursive processes in the world at large. Different scholars may express their positions in different ways, articulate their thoughts using different concepts, may emphasise different areas of discourse, but their underlying, fundamental epistemological positions may be the same. As Foucault says,

"the frontiers of a book are never clear cut: beyond the title, the first lines, and the last full stop, beyond its internal configuration and autonomous form, it is caught up in a system of references to other books, other texts other sentences: it is node within a network."¹¹

Many authors who have contributed to the discourse of Islamic science, are part of the network of western science. However they may couch their thoughts, whatever values they may seek to protect, whatever beliefs they may confess, they are essentially propagating the dominant, positivist and realist view of science. This view, or ideology, sees science as a universal, objective pursuit of Truth. Muhammad Abdus Salam, Ali Kettani, S. Waqar A. Husaini, Z. R. al-Nejjar and Jamal Mimouni belong to this school, but most Muslim scientists hold this belief.

I intend to critically examine the positions of each of these schools and then suggest some positive ways in which the discourse on Islamic science can move forward.

Nowhere Man

Let me begin with Nasr and his followers. To understand where Nasr is taking the discourse, and through his prolific output Islamic science itself, we must appreciate where he is coming from. One needs to understand his world-view, not because one wishes to make cheap sectarian points, but because his distinctive outlook permeates everything he writes; indeed, his whole *oeuvre* is an extended apologia for *his* rather specific and circumscribed outlook.

I am not concerned here with Nasr's personal beliefs; the brand of Islam he follows is his own affair. I am concerned with his published views; and a reading of his *oeuvre* reveals that he is heavily influenced by Ismaili thoughts and is a strong—this is probably an understatement—supporter of the Guenon/Schuon school of thought. To understand Nasr's whereabouts, it is important to appreciate both Ismaili thought and Guenon/Schuon worldview which form the basis of his own *Weltanschauung*. I will explore both by looking at a representative segment of Nasr's *oeuvre*; and where necessary I will provide that amount of background and historic information which is essential to the argument.

Ismailism branched off from the mainstream of Islamic thought around the latter part of the eighth century. Its main dispute with mainstream Shia orthodoxy concerned Ismael, son of Imam Jafar Sadiq, the sixth Imam, who they believed should have been designated the seventh Imam of the Shia. They emphasise the internal and symbolic teachings of the Qur'an, from where—along other sources to which we shall turn shortly—they derive a distinct body of esoteric teachings and particular cosmology. As Hakim Mohammad Said and Ansar Zahid Khan point out,

"the Abbasid period saw this branch of Shiism developing regional and ethnic affiliations. It was able to gain Yemen and North Africa to its cause. At one stage coinciding with the decay of the Abbasids, the Ismaili beliefs nearly overwhelmed the whole Muslim world. The tenth century witnessed the greatest period of glory for these beliefs under the Fatimids (909-1171 AD.) with their new capital at Qahira (Cairo founded in 969 A.D.). In the east their movement was characterised by two developments. In Iran and Transoxiana where the Abbasids had been successful, they developed a rational and philosophical style while in Sind they closely identified the idea of redeemer with that of the awaited incarnation of Vishnu. The former gave birth to Ikhwan al-Safa, while the later resulted in *Dasa-avtar*, one of the canons of modern Ismailis".¹²

Thus Hindu philosophy, particularly the notion of reincarnation any cyclic time became part of Ismaili doctrines at a very early stage.

The Ismaili doctrine has two main facets: the *zahir*, or the outwardly, which is essentially similar to the Shia theology and

practices; and the *batin*, or the hidden, an esoteric system of philosophy and science, amalgamated with some notions of the Qur'an and serving as a guide to its inner content, providing religious prescriptions and, in its original formulation, intended to prove the divine origins of the institution of the Imamate and the exclusive rights of the Fatimids to it. The most prominent elements of this system are the gnostic traditions of the Greeks, including the mystical teachings of Pythagoras, the neo-Platonic philosophy, the natural philosophy of Aristotle, aspects of Hindu philosophy such as the notion of cyclic time and elements of Zoroastrianism. All these heterogeneous elements are combined with an Islamic gloss to produce an occult framework where gnosis circles around alchemy, angelology, numerology and astrology and other forms of esoterism.

Nasr fuses his Ismaili esoterism with the *religio perennis* philosophy of the Guenon/Schuon school of thought. This philosophy, based on the esoteric and sapiential teachings of Platonism, Vedanta, Sufism and Buddhism, seeks a rediscovery of alchemy and other occult sciences and owes its formulation to the originator of movement Rene Guenon (d. 1951) and its main expositor, Frithjof Schuon. Guenon, a French mystic, attacked the modern world from a 'Platonic' point of view in such works as *The Oriental Metaphysics*¹³ and *Reign of Quantity and the Signs of the Times*¹⁴. He considered all traditional forms to be various expressions of the one supra-formal Truth, which he sought to illustrate with exposition of traditional symbols. Frithjof Schuon took Guenon's philosophy to the realm of *religio perennis* which he expressed in *The Transcendent Unity of Religions*,¹⁵ *Castes and Races*¹⁶ and *Light on the Ancient World*.¹⁷

An important aspect of Schuon's (who is now reliably reported to be having visions of the Virgin Mary) philosophy is that the ancient Orphic and Dionysian mysteries led to, in Nasr's words, "a veritable Greek miracle" and such figures as Pythagoras, Plato, Aristotle and Plotinus were associated with this 'miracle' and thus had divine qualities. (Indeed, Nasr wants to believe that Plato was a Prophet—a Prophet who advocated oligarchy, eugenics, a dissolution of the family, controlled sexual relations between men and women, and found homosexuality rather acceptable!—and that "Greek philosophers had learned their philosophy from the Prophets"). Other members of the school include the Swiss sufi Titus Burckhardt (d. 1984),¹⁸ the Hindu mystic Ananda K Coomaraswamy (d. 1947),¹⁹ the British mystic Martin Lings,²⁰ Victor Danner²¹, Jacob Needleman²²; Gai Eaton²³

and Osman Bakr are new recruits, and other mystics such as Ali Ashraf²⁴ and Hadi Sharifi, aspiring members. (Lings and Eaton lean towards Islamic Orthodoxy). The group focuses round the British journal *Studies in Comparative Religion*, in which their writings regularly appear.

In all his works, whether he is writing about art, science, religion, philosophy, history or Islamic way of life, Nasr is propounding the philosophy of Ismaili esoterism and *religio perennis*; this is why, whatever the context, he essentially says the same thing; this is also why he is so prolific (since he has nothing new to say). Almost all the references in his book are to the other members of the group or to two noted contemporary exponents of Ismaili gnosis: Louis Massignon²⁵ and Henry Corbin.²⁶ And as befits the devotee, a great deal of his output is simply an exposition of the masters' philosophy: "we wish to express our gratitude especially to Frithjof Schuon whose uparalleled exposition of traditional teachings is reflected, albeit imperfectly, upon many of the pages which follow."²⁷ Not suprising when "Schuon seems like the cosmic intellect itself impregnated by the energy of the divine grace surveying the whole of the reality surrounding man and elucidating all the concerns of human existence in the light of sacred knowledge".²⁸

Having specified the context in which Nasr is writing, let us examine what he is actually saying. For Nasr, at a certain level of reality, all religions are the same; this in fact is the basic thesis of "*scientia sacra* (which can be) expounded in the language of one as well as the other perspective. It can speak of God or the Godhead, Allah the Tao, or even nirvana".²⁹ When Nasr uses the terms knowledge', 'sapience' 'intelligence', 'science', 'consciousness', he means one and the same thing; Ismaili Guenon/Schuon version of gnosis.

In the beautifully illustrated, *Islamic Science*, the context in which Nasr is writing can be clearly seen. When setting out the cosmology of Islam, Nasr takes particular care to ground it in his particular world-view. "Islamic cosmology", he writes,

"aims at providing a vision of the cosmos which enables man to pierce through the visible world to the higher states of existence and creating a science of the cosmic domain which acts as a ladder to allow man to mount to the 'roof of the cosmos', to use the well-known phrase associated with Rumi, and even beyond it behold Metacosmic Reality which transcends all the planes of cosmic manifestation. The Origin of the Principle of the Universe is at once Being, conscious-

ness and bliss (*wujud*, *wujdan* and *wajd* in Arabic) and these qualities flow in the arteries of the cosmos precisely because the cosmos is a manifestation of the principle. Traditional cosmologies are means of gaining knowledge of this positive aspect of the cosmos; in the bosom of metaphysical doctrines and with the aid of appropriate method of realisation they enable men to gain access to that consciousness and experience, that bliss which is already a taste of paradise".³⁰

Thus in this highly reductive definition, Islamic cosmology is equated simply with mystical experiences; normal questions of cosmology such as origins and structure of universe, its ethical and value dimensions, are totally ignored. Furthermore, by mentioning Rumi, and then immediately bringing the notion of 'traditional cosmologies', Nasr makes it appear that 'traditional cosmologies' are an integral part of Islamic cosmologies. Now in Guenonite thought, the notion of 'traditional cosmologies' have a specific meaning, and that Nasr is referring to the Guenonite notion is borne by the fact that there are no less than four citations to Schuon (as if Schuon is the only person who can enlighten us on this topic on a single page!).

What is the Guenonite notion of 'traditional cosmologies'? Two colour plates later, Nasr tells us:

"Islamic cosmology has made use of such diverse elements as Qur'anic symbolism, concepts and symbols drawn from the doctrinal formulation of Sufism (itself developed to a large extent from the Qur'an and Hadith), theosophical and philosophical descriptions of the cosmos, numerical symbolism and traditional astronomy".³¹

For 'Qur'anic symbolism' read the esoteric Ismaili interpretation of the Qur'an. The 'doctrinal formulation', even though they are based on the Qur'an and Hadith, must clearly be distinctively different from Islamic doctrines otherwise it would not constitute one of the 'diverse elements'. And what theosophical and philosophical description of the cosmos' is Nasr referring to? He gives an example from the schemes found in the writings of Sayyid Haydar al-Amuli who

"had a particular love for geometric patterns and made use of them as symbols of his cosmological doctrines. He designed the mandalas to be contemplated by the adept, complicated patterns in which the twelve Imams of Shi'ism enter into the

cosmic scheme to play a major role as so many epiphanies of the Logos and reflections of the Divine Light. The number twelve naturally plays a central role in these patterns, which unify angelology, imamology and astronomy in grand schemes unveiling the contours of the Islamic cosmos with its particular Shi'it colour."³²

As to 'numerical symbolism' that comes from a combination of "Aristotelian doctrine of the three kingdoms and the Pythagorean philosophy of numbers with Islamic metaphysics while making use of the sciences concerned with symbolism of the Arabic alphabet as well as symbolism of certain words and phrases. In the case of the Ikhwan al-Safa, whose *Epistles* reflected the thought of certain circles within Shi'ism, especially Ismailism, and which are related in many ways to the Jabirean corpus, there is to be found more than anything else a Pythagoreanism combined with Aristotelian natural philosophy and integrated into the matrix of Islamic esotericism, while in the works of such man as Shams al-din al-Buni certain Hermetic and also magical ideas enter into a picture."³³

What is Pythagoreanism? And Hermeticism? And what aspect of Aristotelian natural philosophy are we concerned with? And why does Nasr insists on making them a central part of Islamic cosmology. The answer lies in the theology of Guenon and Schuon, in the religion of gnosis, what Nasr refers to as 'traditional cosmologies'.

Gnosis emerged as a cult in Palestine in the first century BC, although its exact origins are still disputed by scholars. At the end of the Hellenistic age, Greek philosophy fused with Persian dualisms and orthodox Judaism in Egypt and Palestine to produce the lethal religion of gnosis—knowledge of the true nature of things. Pythagoreanism already provided a fertile ground for it. This esoteric cult was founded by the Greek mathematician whose name is associated with the famous theorem. Established in Croton about 530 BC, this confraternity believed in the doctrine of reincarnation of the soul into the bodies of men and animals and even certain plants. Pythagoras had a very good memory which enabled him to recall his former lives. The sect practiced a severe discipline which included secrecy, respect for the authority of the master, ritual purifications, memory exercises, examination of conscience and various food taboos. Pythagorean cosmology gave an essential place to numbers, which were represented by points juxtaposed to form squares, triangular and rectangular figures. "Things are numbers", Pythagoras

used to say. He discovered the relations of principal numbers (2/1, 3/2, 4/3), which determine the principal intervals of musical scales (fourths, fifths, octaves). Pythagoras believed that events in the heavens had earthly counterparts and that through appropriate disciplines men could become immortal gods. The last stanza of the golden verse of Pythagoras, which formed the basis of his creed, reads: "And when, after having divested thyself of thy mortal body, thou arrivest in the most pure Aether, thou shalt be God, immortal, incorruptible, and death shall have no dominion over thee"³⁴. Hermiticism, based on the treatises on alchemy and magic of Hermes Trismegistus, provided another impetus of the emergence of gnosis. In the *Asclepius*, the last and most advanced teachings of Hermes, one finds the bold claim that he who has grasped its meaning will be '*omnium bonorum tota mente plenissimus*'; in other words he will have attained to complete gnosis, he will 'see God', or be united with God.³⁵ Aristotle's theology, developed in *Physics*³⁶ and *De Anima*³⁷ added further fuel to the rise of gnosis. It is from this Greek theological background that gnosticism derives its central notions: secrecy, authoritarianism from Pythagoras; the true nature of knowledge from Hermes Trismegistus; the notion that an improbable order reigns in the celestial domain while a large place is left to hazard and liberty in the sublunary domain from Aristotle; the ideas of oligarchy, purity and hierarchy from Plato. For example, a Gnostic-Platonist will explain the notion of hierarchy by stating that from the higher gods emanate lower gods, in vast hierarchy that stretches down from the One and the archetypal Ideas to the Demiurgic Jupiter, who made the planet we live on. The human soul, naturally a part of the higher planes, is sunk in matter and in ignorance, and its task is to journey laboriously upwards, leaving behind the world of substance to join its native star, or even to be subsumed in the very Absolute itself. Add Islamic terminology, and you have the gnosis of Nasr.

So where does Islam figure in all this? It is clear that there is little Islamic content here but as Greek Gnosticism is able to fasten like a parasite on Islam, it is able to present the whole thing in Islamic terminology.

It is hardly surprising then when it comes to the actual history of Islamic science, Nasr presents it essentially as a history of esoterism and occult, interpretation and adoption of Greek methodology by the Muslims, and takes every opportunity to glorify gnosticism. In the chapter on mathematics, he presents highly distorted and selected examples constantly trying to read 'cosmological and magical schemes' into Muslim mathematics.

Thus 'Pythagoras was Islamized rapidly' because 'there already existed an 'Abrahamic Pythagoreanism' in Islam!³⁸ Moreover, almost all of Muslim mathematics was concerned with and "closely connected with the study of magic squares and amicable numbers, which were applied to various occult sciences from alchemy to magic."³⁹ We *know* that algebra emerged to deal with the laws of inheritance, as is even evident in al-Khwarazmi's classical work from whence the discipline takes its name. But Nasr chooses to totally ignore the arithmetic of inheritance and describes algebra as "closely related to certain metaphysical principles so central to Islamic doctrines".⁴⁰ The implication being that Algebra grew not out of the physical necessity of dealing with the laws of inheritance but was a natural outcome of the Greek mythological cosmologies which the Muslims were supposed to have adopted! Quite a few assertions of Nasr are simply statements of beliefs and have nothing to do with the history of Islamic science. Thus, because the Aristotelian system is an important part of both Ismaili and Guenonite theology, Nasr attributes Al-Biruni with making a meaningful model of the Aristotelian system; no doubt al-Biruni would have made it if it was possible, but it is impossible, even with the help of gnosis, to make meaningful models based on the Aristotelian system!

When we come to astronomy, we discover that Nasr is not the least bit interested in the particularly Islamic aspect of Islamic astronomy: the determination of the visibility of the lunar crescent, the determination of astronomically defined times of prayer, the determination of the direction of the qibla—a task that occupied Muslim astronomers for over a thousand years and form a vast corpus of the literature on Islamic astronomy. Instead we are presented with selected works of 'outstanding Persian' scholars to whom all sorts of things are attributed. For example, he attributes the calculation of the tables of tangent to the thirteenth century Persian astronomer Nasir al-din al-Tusi, when we know that he simply plagiarized them from the tenth century Egyptian astronomer, Ibn Yunas. He attributes the invention of declimal fraction to Kashani, "the outstanding Persian mathematician". when it has been established that al-Uqlidusi of Damascus wrote on decimal fraction five centuries ago. Similarly, the "earliest astrolabe is from 4th/10th century Isfahan" while at least six earlier ones can be traced back to Iraq. There is a great deal of emphasis on astrolabes because of their alleged astrological significance but there is nothing on the two instruments which Muslims really developed the sun-dial and quadrants. Instead, astrol-

ogy, that most Islamic of Islamic science, gets appropriate attention:

"It was the profound symbolism inherent in astrology which made its integration into Islamic civilization and especially into certain aspects of Islamic esotericism possible, despite obvious external differences between astrological attempts to predict future events and the Islamic emphasis upon the omnipotent character of the Divine Will. ...But the branches of astrology among Muslims are the same as among the Greeks or ancient Persians. They include judicial astrology, dealing with the prediction of the future of events or institutions, genethliac astrology, dealing with the horoscope of individuals, and the cosmological aspects of astrology."⁴¹

But if Islamic astrology is the same as Greek and ancient Persian astrology, what is Islamic about it? Why adjectivise it with Islam, especially when it contradicts the Islamic notion of an omnipotent God? It is because of his fundamental belief in Greek esoteric mythology and its association with Islam, that Nasr demeans the formidable contribution of Muslims in this field. As David King points out Nasr pays

"perhaps the weakest tribute to the Islamic astronomical tradition. One of his final comments on p133 must suffice as an example: 'but perhaps the most enduring contribution of Muslims to the history of astronomy was their transforming the Ptolemaic spheres from merely mathematical models to physical realities'. It happens that we know that Ptolemy's *Planetary Hypotheses*, which was the starting point of Muslim investigations of theoretical astronomy, is a description of the arrangements of the heavens based on the assumption that the models of planetary motions have a physical existence. And since modern astronomers no longer believe in the physical reality of the planetary spheres this 'enduring contribution' of the Muslims (and the Greeks) is not generally recognised today".⁴²

It is not just in mathematics and astronomy that occult, magic and Greek mythology is disguised as Islamic history of science. "Science principles of physics are to be found solely in metaphysics and nowhere else"⁴³ (a statement of belief I find absurd) we are launched into another magical, mystery tour. Nothing is spared: even animals and plants come in for occultish treat-

ment. Thus, botony involved "the study of the occult properties of plants, as well as their symbolic and spiritual significance in the cosmos,"⁴⁴ although not a single example is given of the occult study of plants. Animals are symbols of cosmic qualities and spiritual attitudes⁴⁵ And space itself has occult and sacred properties.

Cast within the world view of Islam and centred most of all upon the vast confines of dar al-Islam, the science of geography drew from any sources, such as Babylonia, Greece, India and especially Persia. Pre-Islamic Persian geography had already influenced pre-Islamic Arabic geographical ideas, as the Arabic word *barzakh*, which comes from the pahlavi *far-sang*, reveals, and it played a central role in the early Islamic geography as well. The ancient Persian saw the earth as an angel and possessed a highly developed 'visionary geography'. Their division of the world into seven circular 'regions' (*kishwars*) was a terrestrial reflection of the sevenfold spiritual heirarchy and left its deep effect upon geographers of the Islamic period, who were fully aware of the symbolic significance of seven in both the Greek scheme of the climate and the Persian scheme of the *kishwars*. Likewise, the central cosmic mountain of the ancient Persians became transformed into the Mount Qaf mentioned in the Qur'an, and at least among a great number of Islamic geographers the central region of the world was conceived in anew fashion so as to encompass Mecca, the centre of the Islamic world and the point where for Muslims the heavenly axis touches the terrestrial plan. In 'Islamicizing' the natural world about it Islam in fact incorporated much of the symbolic and sacred geography of the traditions before them, sanctifying them anew through the power of the new revelation. How many mountains, lakes and other distinct loci can be found today in the Islamic world which are of particular religious significance now and were also of special religious significance in the traditions which preceded Islam.⁴⁶

None; with the obvious examples of the Haramain, including Jerusalem. But that does not give rise to a 'sacred geography' as a discipline!

Then, of course, there is the *piece de resistance*: a whole chapter on occult sciences. Islamic science, we are told,

"include a category called the hidden (*khafiyyah*) or occult (*gharibah*) science, which have always remained 'hidden'. both in the content of their teachings and in the manner of gaining accessibility to them, because of their very nature... These sciences in their unadulterated form... deal with the hidden forces with the cosmos and the means of dealing with these forces. In a traditional world, these sciences were kept hidden in order to protect society from their being used, or rather misused, by the unqualified, much like esotericism itself, of which they are branches... Moreover, in the light of the esoteric dimensions of the Qur'anic revelation, these sciences, some of purely Semitic origin and others inherited from the Hellenistic, Egyptian, Babylonian and Iranian worlds, become like shining stars in the firmament, providing so many keys for the contemplative understanding of the inner processes of the natural order.⁴⁷

This, of course, is a pure statement of belief: a description of the Ismaili doctrine of gnosis. It also happens to be one of the two chapters in the book containing a section of modern practices; physics does not deserve one, astronomy does not deserve one, even the chapter on environment does not discuss the contemporary work done by Muslim environmentalists and architects, but occult sciences deserve an 'Islamic alchemy today' section!⁴⁸

Even in his bibliographical work, Nasr's only concern is to propagate his Ismaili and Guenon/Schuon theology of gnosis. Science is said to "embrace nearly all the traditional 'intellectual sciences'" with the exception of "those elements which are not related to either the world of nature or mathematics". But it includes all branches of philosophy except "practical philosophy such as ethics, politics", and all areas of Sufism and theology, including magic, folk medical practices and popular 'occult' sciences.⁴⁹ Thus once again in the guise of Islamic science we are treated to Ismaili philosophy and theology, writings of Ismaili occultists and works on occult and Hermetic subjects. As a purely bibliographical work, this is simply third grade for it fails to differentiate between fundamental and trivial works, books and pamphlets, gives no indication of whether the book contains any illustrations, indexes, bibliographies, provides no distinction between important authors and minor figures, contains hardly any annotations, virtually no mention of reviews, has a daft classification, countless errors, a reservoir of misinformation, and important omissions; but I am not concerned here with the merits of

the bibliography (those interested in this can read Robert Hall's assessment of volume 1,⁵⁰ but more its ideological orientation.

Nasr is concerned with an intellectual space called 'Islamic science' that he wants to define according to his own perceptions and world-view and ultimately control, dominate and shape its content. Thus the notion behind the bibliography is that if 'Islamic science in history' can be equated with Ismaili gnosis and Greek traditional cosmologies, then the contemporary debate on the subject can be focussed in this arena. Thus to ensure that the student using the bibliography does not discover the real content and nature of Islamic science, Nasr does not provide entries for established basic works in the area. Thus, Fuat Sezgin's *Geschichte des arabischen Schrifttums*⁵¹ does not get an entry; it is not possible for a scholar trained in the history of Islamic science to overlook the basic bibliographical tool for Muslim scholars to 1040 CE. Neither does the *Dictionary of Scientific Biography* which contains the standard accounts of Muslim scientists many by noted Muslim historians of science. Noted serial bibliographies such as *Abstraca Islamica* also do not get a mention. Moreover, to ensure that his particular notions of Islamic science get prominence, Nasr describes his own book science and Civilization in Islam in grandiose terms and cites every chapter and section of the book!

In volume 2 we are treated to a long section on Greek mythology and philosophy where all the favourites—Plato, Pythagoras, Aristotle—appear in a very selected form. When we move to individual sciences, we are treated to a real hotch potch of mysticism and occultism. Under mathematics and astronomy, for example, we find entries on "the problems of the souls of the sphere from the Byzantine commentaries to Aristotle through the Arabs and St. Thomas to Kepler", "Arabic transmission of science" and "the mercury horoscope of Marcantonio Michiel of Venice"⁵²

Further still we get a special treatment of Near Eastern, Iranian, Indian and Chinese varieties of mysticism and gnosis in the guise of mathematics, cosmology and medicine. In case we still have not got the message, there is a special section on cosmology and cosmography with "specific problems" like angelology, 'light' (out of ten citations in this section 8 are to Henry Corbin, one to Louis Massignon—needless to say talking about Ismaili gnosis, p.278) and time-space.

So there we have it: anyone ploughing through *An Annotated Bibliography of Islamic Science* could be forgiven for believing

that Islamic science is another name for Ismaili gnosis, great mystery religions and the occult.

Both in his *Bibliography* and *Islamic Science*, Nasr makes what is marginal, on the whole unimportant, and essentially side issues and ideas, the main focus and hence the norm of Islamic science. Even if one accepts Nasr's ideas as 'Sufism', which I do not, we know that Sufism was not the only trend, or indeed the dominant trend, in Muslim intellectual history. Nasr's treatment is like writing a history of sexuality in Muslim civilization and making homosexuality (and homosexuals certainly existed throughout Muslim history) the dominant and normal sexual behaviour! (this would be the case if one were to read Greek notions of love in Islam as homosexuality played a major part both in Greek society and thought.⁵³ It is worth noting that in contrast, Ahmed Y al-Hassan and Donald R Hill in their recent work, *Islamic Technology: An Illustrated History*⁵⁴ do not consider Hermeticism, Pythagorean numerical mysticism, occult, magic, astrology and alchemy as part of Islamic science even though one finds that they are discussing many of the same scientists and their works, and intellectual developments and trends. Indeed, these categories hardly make an appearance in their work. It is also worth mentioning that al-Ghazzali, who was himself a Sufi, rejected all this magical, mystical construction and labelled them as blameworthy knowledge. Of astrology, he writes:

"...astrology is purely guesswork and in the opinion of the average man, (the influence of the stars) is not determined either with certainty or even with probability. Pronouncements in connection with it are the result of ignorance. Consequently astrology has been pronounced blameworthy because of its ignorance, not because of its knowledge. Furthermore, this knowledge, it is said, was of miraculous (nature) possessed by the prophet Idris, but has now vanished and is no more. The rare cases in which the astrologer happens to be correct are coincidences... For this reasons, even the strongest minded person has been forbidden to (practice) astrology.. (Moreover) it is of no use at all. The most which can be said on its behalf is that it is, at its best, an intrusion into useless things and a waste of time and life which is man's most precious belonging. Such a thing is the most serious loss."⁵⁵

So much for history. Let us now look at the theological and practical aspect of Nasr's programme for Islamic science. In his forthcoming book *Philosophy of Islamic Science* Nasr devotes a

whole chapter to explaining "What is Islamic science?" We shall examine it point by point.⁵⁶

1. "To understand the nature of this science", Nasr writes, "it is important first of all to distinguish it from its application in the form of technology and even from the ethical implications of this science."⁵⁷ To distinguish, of course, does not necessarily means to divorce. But in his vast output, Nasr have never once discussed the ethical implications of Islamic science or its practical and applied applications. One is forced to conclude: Nasr's Islamic science is divorced from ethics and pragmatic concerns.

2. "A science worthy of being called Islamic must reflect and lead to unity; it must not hide the interrelation of all things which is a reflection upon the level of multiplicity of unity but rather accent and reveal it", and, "Unity must also be reflected in any Islamic science through its awareness of Unity as the Divine Principle and not only as the principle of integration and interrelation."⁵⁸ A number of questions arise here. How does a science lead to unity? How does one avoid not hiding the interrelations of at least a few things?

Nasr's notion of unity is not what conventional Muslims like myself understand by *Tawheed*; the unity of God. Nasr is talking about some sort of underlying metaphysical unity which does not distinguish between the Creator and the created; both are an extension of the same Unity. Elsewhere, we get an explanation of it: "the metaphysical knowledge of unity comprehends the theological one in both a figurative and literal sense, while the converse is not true"⁵⁹ In other words, Nasr's metaphysics of unity is greater than religion itself, and as such it is clearly above our theological understanding of Islam. But if this Unity does not distinguish between the creator and created then surely only a super-human person, or another diety, can claim not to "hide interrelationships of all things?" Clearly an absurd assertion.

3. We proceed: "the concern of certain mathematical physicists in this century for mathematical symmetry and beauty almost as scientific argument represents a philosophy similar to this aspect of Islamic science expect that Islamic science connotes invariably this mathematical harmony and beauty to the Beauty of God and sees in this harmony an imprint of the Wisdom of the Creator."⁶⁰ And in the footnote we read: "This aspect of Islamic science resembles greatly the Pythagorean-Platonic tradition which Islam integrated so easily with its own world-view precisely because this was a wisdom based on Unity and harmony and therefore close to the perspective of Islam but not the cause of it."⁶¹ Why does Nasr insists on drawing parallels between the Islamic

notion of Unity and the Pythagorean-Platonic tradition? Because he sees the whole notion of Unity in Pythagorean-Platonic terms. If, as the Pythagoreans believed, numbers correspond to heavenly activities, then by decoding these numbers scientists are discovering Absolute Reality. Thus Nasr believes in mathematics not as an instrument for solving problems but as a magical system for removing the hidden veil of Reality. What this literary means is that Heisenberg Uncertainty Principle, Schrodinger's Equations, Maxwell-Boltzmann distribution, *et cetera* reveal the Beauty and Reality of God!

4. More follows in the same vein: we are told that mathematical models must correspond to reality, largely because Ptolemy said so. "In Islamic science this nexus between science and reality must exist. Science must correspond to some ontological aspect or aspects of what it studies. It cannot remain satisfied with mathematical models which can predict events and describe phenomena but which do not correspond to physical reality"⁶² Thus in Islamic science mathematical models are not just tools but have one-to-one correspondence with reality. But this assumes two possibilities: one that we *know* reality so that we are in a position to tell that the correspondence is exact; for example, we really have to know—as we know a chair or a cat—what are neutrinos, quarks and quantum waves and not just some of their properties. This is clearly an impossibility; and what this assertion does to the Heisenberg Uncertainty Principle I shudder to think. Second, as Parvez Mansoor points out "the only kind of world that submits itself to decodification by the ciphers of mathematics is the one that has been encoded so."⁶³ So if you believe that God has been writing equations in the heavens you will be on to a good thing. But this possibility also has an ironic side-effect in that it actually writes off God from the whole enterprise. Mansoor again: science "posits, the existence of a world that is already amenable to mathematical codification and whose 'essential' attributes are mathematical. The ultimate reality of science, therefore, is a physical universe that is devoid of any ultimate goal. The universe of mathematical ciphers is a universe without ethical purpose..."⁶⁴

5. Furthermore, "the goal of any science which can be characterised as being Islamic must be to study the nature of things, or some level of reality in its ontological sense and not only accidents and phenomena independent of substance and the noumena."⁶⁵ So Islamic science is essentially an ontological enterprise, it deals with the nature of being and not with the physi-

cal, biological and material aspects of phenomena. It is a metaphysics and not a practical enterprise.

6. "Conjecture and hypothesis must never be mistaken for science which in the Islamic context always implies certitude. There is a place in Islam for a 'science' of the physical order which 'grows' from the less exact to the more exact but this type of 'science' which grows from the knower to the unknown must be subordinated to that highest science which is based on certitude and permanence"⁶⁶ Does that mean that scientific activity should be guided by immutable and certain values? No. Since Nasr equates *ilm* (knowledge with *al-haqqiqah* (the Truth), it is the 'certitude and permanence' of *al-haqqiqah*, or rather the mystical experience of *al-haqqiqah* that becomes the prime mover of science. Such an endeavour has nothing to do with a problem solving enterprise.

"No science can claim to be Islamic which seeks to study the material universe independent of the higher levels of existence and as if it were an independent order of reality. Nor can a science be Islamic if it does not remain aware of the levels of consciousness and modes of knowing."⁶⁷ How do you integrate 'higher modes of existence' in material phenomena? By ascribing them with symbolic, magical and occult properties, of course.

7. And finally to the crunch: "Without hierarchy there is no Islamic science no matter how many pious assertions are made about studying nature as God's creation."⁶⁸ One could reasonably assume that by hierarchy Nasr means classification of science to set priorities and emphasis, to delineate what should be done first establish an appropriate order for doing science, solid state physics before high energy physics, diarrhea research before cancer cures, food research before slimming diets. But one would be wrong. Nasr's obsession with hierarchy and that clear precise declaration that "without hierarchy there is no Islamic science" hides a deeper meaning. In Ismaili gnosis and Gnonon/Schuon theology, hierarchy has a special significance: it is an integral part of Imamology and angelology. The Angelic world is structured in a strict hierarchy from the level of the Uppermost Heaven, the First Intelligence, the *Natiq*, who signifies the literal or exoteric statement of positive religion, to the Second Intelligence, the Heaven of the Fixed Stars, where the *Asas* provides the exegesis of the estoteric meaning, to the Third intelligence, Heaven of Saturn, the domain of Imam, who has personal mastery over the community, and so on.⁶⁹ Accepting this hierarchy therefore signifies submitting to the appropriate level of Intelligence. A science that submits to this hierarchy becomes sub-

ject to the esoteric interpretation of the Imam. Scientists therefore become the devotees of the Master and this is how their science acquires its ontological significance and the ultimate end of science becomes God. Thus, for Nasr, only that science is 'Islamic' which functions on the model of the Pythagorean cult, or a Platonic republic ruled by a master race of purified gnostics, or in gnostics framework where all owe unqualified allegiance to the Master who gives it a purpose and direction: "hierarchy also exists in the subject which studies the objective order. There are not only levels of reality to be studied but also levels of consciousness or modes of knowledge of a hierarchic nature capable of studying that objective reality. The Qur'an itself refers to the level of the soul ranging from the *nafs al-ammara* to the *lawwamah*, *mutmainnah*, *radiyya* and *mardiyyah*. Likewise, it refers to levels of those who know, distinguishing between those who know and those who do not, and furthermore between those who are 'firm in knowledge' (*al-rasikh-un fi'l-ilm*) and ordinary knower".⁷⁰ Thus those who know the Truth (*al-haqqiqa*), like Ismaili Imams, Guenonite masters, practioners of alchemy and other esoteric occultism, have a divine right to be accepted as masters, give esoteric interpretation to science and scientific output, and lead the scientific community to the path of God.

A study of Nasr's *oeuvre* leads to the conclusion that he is a nowhere man, occupying a nowhere land: his discourse is neither about Islam, nor about science; but, as we shall see shortly, it is a purely totalitarian enterprises.

Ground Control to Major Tom

So what do we actually learn from Nasr's discourse on Islamic science? Nasr is telling us that:

1. All religions, including secular world-views such as Buddhism, are the same at a certain level of reality.
2. Pythagorean cult, neo-Platonism and other ancient esoteric mythologies are the basis of Islamic metaphysics.
3. The Zoroastrian notion of a world perpetually in battle between the forces of light and darkness is a part of Islamic metaphysical system.
4. The Hindu notion of cyclic time, reincarnation and karma are also an integral part of the Islamic metaphysical system.
5. Gnostics are somehow superior beings who know the Truth.
6. Islamic cosmology is essentially a combination of gnosticism and occultism.

7. The history of Islamic science is basically a history of astrology and magic, numerology and alchemy, sacred geography and geometry, gnosis and Greek mystical mythology.
8. Islamic science has nothing to do with the practical realm, it is a purely abstract form of mysticism.
9. Islamic science is divorced from ethics.
10. The goal of Islamic science is Unity, but since this Unity is so all pervasive that there is no distinction between the Creator and the created it is essentially an elusive goal.
11. Islamic science is the study of ontological reality.
12. Islamic science is hierarchical which means that it must submit to the authority of the Gnostics and others who know the truth so that the correct esoteric interpretations can be given to Islamic science.

Following Feyerabend, we can say that this system of 'science' is neither superior nor inferior to any other system of science. There are, however, certain social factors associated with this framework of thoughts that ought to be appreciated. Apart from its Islamic gloss, and the fact that it is a very confused and incoherent mixture, the underlying metaphysics is not entirely new. Throughout history, it has existed in one form or another, indeed, the fact that Nasr can borrow so easily from this ancient cult and that religious cosmology, means that the barebones of the framework have existed since the beginning of history. That it is not an expression of Islamic ideas and ideals should be evident; what may not be apparent is that, throughout history, emergence of such gnostic frameworks of thought, and the authoritarianism and extremism which goes with it, are associated with certain developments.

For example, the emergence in the late nineteenth century of the *volkish* ideology in Germany and Austria owes a great deal to this type of metaphysical framework. This ideology emerged as a reactionary response to the problems of nationality and modernity and led to the theories of Aryan German racial excellence and eventually to the emergence of the Third Reich. Occultism was invoked to endorse the enduring validity of an obsolescent and precarious social order. The occultism that formed the basis of *volkish* ideology, as Nicholas Goodrick Clarke points out in his powerful and scholarly study, *The Occult Root of Nazism*⁷¹ was based on Gnosticism, the Hermetic corpus, Pythagoreanism, neo-Platonism, the Hindu belief in reincarnation, karma and cyclic time, the Cabala and religious trappings of Christianity. This lethal formula was turned by Helena Petrovna Blavatsky (d 1891), a Russian occultist, into a framework of thought which

came to be known as theosophy and became the foundation stone of Nazism. The founder of the Theosophical society, expressed the basic beliefs of her occult metaphysics in *The Secret Doctrine*, one of her many books which had such titles as *Isis Unveiled* and *The Coming Race*. Goodrick-Clarke summarizes her metaphysics expressed in *The Secret Doctrine* in three principles:

"Firstly, the fact of a God, who is omnipotent, eternal, boundless and immutable... Secondly, the rule of periodicity, whereby all creation is subject to an endless cycle of destruction and rebirth... Thirdly, there exists a fundamental unity between all individual souls and the deity, between the microcosm and the macrocosm. But it was hardly this plain theology that guaranteed theosophy its converts. Only the hazy promise of occult initiation shimmering through its countless quotations from ancient beliefs, lost apocryphal writings, and the traditional Gnostic and Hermetic sources of esoteric wisdom can account for the success of her doctrine and the size of her following amongst the educated classes of several countries.⁷²

These ideas were adopted by German theosophists such as Guido von List, Jorg Lanz von Liebenfels, Rudolf von Sebottendorf and Karl Maria Wiligut, all practicing occult gnostics, and shaped the mythological mood of the Nazi era. Goodrick-Clarke demonstrates convincingly that the desire to found a nation of pure Aryans *evolved directly* from elitism and authoritarianism of gnosis.

In Muslim history itself, there are examples of gnostic totalitarian groups. An obvious example is the Ismaili Order of Assassins which, from the late eleventh to the closing quarter of the thirteenth century, freely and frequently carried out assassinations of their political opponents. The Assassins were organised into a hierarchical secret society and owed blind obedience to their gnostic head, the Grand-Master. One of their first victims was the celebrated wazir, Nizam al-Mulk who founded the famous Nizamiyyah Madrasah and library in 1065 in Baghdad.

The impact on the individual of authoritarianism and blind obedience and following of the Master, inherent in Nasr's type of gnostic metaphysics is quite devastating. It circumscribes thought within a fixed framework, thus introducing intellectual rigidity and killing creativity. The devotee is almost duty bound to limit his thought to the *oeuvre* of the Master and the Master's

Master. An illustration of this is provided by Osman Bakr, a recent convert to Guenon/Schuon metaphysics. In "The Question of Methodology in Islamic Science"⁷³ Bakr, allegedly presenting a Sufi metaphysics, quotes only from Schuon and Nasr despite the fact that he has been introduced to Sufism not by his current Guru, Nasr, but by his original teacher Naquib al-Attas whose output on Sufism is truly monumental, and who, no doubt, also introduced Bakr to works of original Sufi masters.⁷⁴ Because of the complete surrender of his mind to Guenonite philosophy, Bakr cannot see the contradiction and authoritarianism implicit in this metaphysics. We are thus told that methodology only has meaning if it is related to the "faculties of powers of discernment within man" (in other words, the hierarchal social structure that Guenonite gnostics wish to perpetuate). Why should methodology be a function of social structure? Clearly a deft statement unless you believe that certain individuals are superior to others and by virtue of this superiority have access to certain (secret? occult?) methods which are not accessible to ordinary mortals. Bakr also tells us that "Divine origins of creative ideas should not be denied; neither should the divine origins of that which sustains man be denied". No Muslim will deny the Divine origins of creative ideas; but what is this "divine origins of that which sustains man"? Surely, God sustains man; and He is clearly Divine. Could it be the soul? No, Bakr is referring to something else (otherwise this statement is tautological): he is attributing divine origins to the hierarchal social structure that Guenonite gnosticism seeks. In other words, accept this hierarchy and become the devotee of my Guru for this is the only methodology that Islam allows for. We are then told that the methodology of Islamic science is gnosis. But how can gnosis be a methodology? Bakr explains:

"what is implied here is a spiritual travel, a return of the soul to the Divine origins. This is the basis of the purification of the soul, which is an integral part of the methodology of knowledge in Islam. This particular methodology has often been described as a higher form of empiricism. What is now the object of observation and 'experimentation' is no longer the external object but the soul of the experimenter itself".⁷⁵

So those engaged in Islamic science should base their work purely on gnosis and after each experiment have their soul checked by the Master of gnosis!

The true nature of Bakr's methodology comes to the fore when he tries to bring the Qur'an into the whole equation.

"The methodology of *tafsir* of the Holy Book, as it has been developed traditionally, including especially the method of linguistic analysis, must constitute an integral component of the over-all methodology of Islamic science that is to be revived in the modern world. This is because the Book of nature is the macrocosmic counterpart of the Holy Qur'an"⁷⁶

There is nothing wrong with using linguistic methodology to understand science: the suggestion is not as baffling as it sounds for symbolism inherent in language is similar to that inherent in mathematics. But Bakr has something else in mind which becomes clear when *tafsir* ends and *tawail* begins:

"As applied to the Holy Book itself, where the method of *tafsir* ends that of *tawil* or hermenutic interpretation refers to the knowledge of the inner meaning of the sacred text"⁷⁷

In other words, Bakr wants to interpret the Qur'an not according to the well laid out rules of *tafsir*, or even that of Qur'anic linguistic analysis, but by the magical and alchemical notions of Hermeticism—we are back to the occult. This is taking Greek mythology right to the heart of Islam; if a non-Muslim had suggested this the entire Muslim world would be up in arms!

One of the duties of the devotees is to propagate the ideas and world-view of the Master. Here again, Bakr follows the path of true gnostics. *Critique of Evolutionary Theory*⁷⁸ is a collection of essays edited by Bakr. The book is a tribute to the Guenonite contribution in this area and with one or two exceptions—put there for good measure and to make the whole exercise look more pluralistic—the essays are by noted members of the School. It is worth noting that these essays do not present any arguments or evidence against evolution; they simply make statements of metaphysical beliefs. Bakr's own contribution reads like an undergraduate essay, which it is, and clearly demonstrates the circular and confined nature of his thought. Bakr opens his introduction with the assertion that the arguments against the theory of evolution has been suppressed by the scientific community. This allegation may have been true over two or three decades ago; there is now overwhelming evidence that scientists themselves have taken stand against the theory of evolution; they have criticised it at length and deliberated upon the various perspective offered by Charles Darwin—although Bakr is simply unaware of this. However, Bakr has himself included in this book an essay by W. R. Thompson, a noted Canadian biologist. Thompson's essay was published as introduction to the 1958 edition of Darwin's

Origin of Species. With the very first chapter of this book being a critique of the theory of evolution by a scientist, how can Bakr claim loud and high that scientists have tried to silence the critics of evolution? There is, however, truth in Bakr's assertion that anti-evolutionary view "is being maintained and upheld only by the non-scientific people especially those who have their religious views and interest at stake." How else could he justify his own totally non-scientific view of the theory of evolution, particularly when he is quite incapable of differentiating between the popularly held myths about evolution from what the scientists are actually saying? almost all the essays in the book are obsolete with regard to the prevalent scientific view on the subject. The criticism of this theory within the scientific establishment is based on insights from contemporary knowledge of molecular genetics and not on the preliminary observations on taxonomy of this or that phylum. Had Bakr, instead of reading and re-reading Nasr, Schuon and other members of his gnostic circle, bothered to read Mary Midgley⁷⁹ Gillian Beer⁸⁰ a host of Marxist scholars and even committed Christians such as Alan Hayward⁸¹ he would have been furnished with arguments and real evidence. But since the entire purpose of this absurd book is to promote Guenonite world-view, understanding of scientific issues, getting the facts right and up-to-day are irrelevant matters.

It is possible that Bakr does not know what he is saying or doing; after all gnosticism has a horribly damaging effect on the mind. I like to believe that.

Apart from the emergence of totalitarianism, suppression of creativity and blind Guru worship, there is another factor connected with the rise of occult gnosticism: decline and fall of civilizations. For example, a correlation has been noticed between the proliferation of gnostic and occult sects and the breakdown of the stable agriculturereal order of the late Roman Empire.⁸² Given the overall, extreme emphasis on other-worldly activities in occult esotericism, and the insistence on seeing the underlying Reality of all physical and material phenomena, it is not surprising that it leads to the degeneration of the material world and collapse of civilization. After all, since the beginning of time, no civilization has ever been built on occult gnosticism and its sciences of alchemy, astrology, numerology and the like.

To be concluded

Notes and References

1. M. Zaki Kirmani, 'Issues in Islamic Science', *MAAS J. Islamic Sci.*, 3 (2), 41-70 (1987); M. Zaki Kirmani, 'Imitative-Innovative Assimilation: A Critique of Waqar A Husaini's Scheme of a Contemporary Islamic S and T Rebirth', *MAAS J. Islamic Sci.*, 2 (2), 69-74 (1986) and M. Kaleemur Rahman, 'Preface to Islamic Science', *MAAS J. Islamic Sci.*, 3 (1) 45-56 (1987).

2. M. Zaki Kirmani, 'Issue in Islamic Science', op. cit.

3. M. Kaleemur Rahman, 'Perspective of New Science' *MAAS J Islamic Sci.*,1(2), 75-80 (1985).

4. By working in groups scholars create and maintain an 'intellectual space', a piece of intellectual territory that they then defend from all outsiders. See Ziauddin Sardar, 'Intellectual Space and Western Domination: Abstracts, Bibliographies and Current Awareness', *Muslim World Book Review*,4(2), 3-8 (1984)

5. S. Pervez Manzoor's numerous articles have appeared in the 'Ideas' section of *Inquiry*, see also his 'Environment and Values: An Islamic Perspective' in Ziauddin Sardar (Ed), *The Touch of Midas*, (Manchester University Press, 1984).

6. Munawar Ahmad Anees presents an Ijmalī perspective on biology in his forthcoming book, *Islam and Biological Futures*, (London: Mansell, 1988).

7. Gulzar Haider's numerous papers looking at nature from the conceptual matrix of Islam can be seen in *Inquiry*, see also his penetrating essay, 'Habitat and Values in Islam A Conceptual Formulation of an Islamic City' in Ziauddin Sardar (Ed), *The Touch of Midas*, op cit.

8. See her brilliant new book, *Knowing One Another: Shaping An Islamic Anthropology*, (London: Mansell, 1988)

9. Iqbal Asaria's many articles on Islamic economics have appeared in *Inquiry*.

10. Ibrahim Sulaiman's ideas are found in *The Islamic State and the Challenge of History*, (London: Mansell, 1987). See also his *A Revolution in History* (London: Mansell 1986), and the forthcoming *The Future of Shari'ah*.

11. Michel Foucault, *The Archaeology of Knowledge*, (London: Tavistock Publications) p.23

12. Hakim Mohammad Said and Ansar Zahid Khan, *Al-Biruni: His Times, Life and Works*, (Karachi: Hamdard Foundation, 1981), p.34

13. Paris, 1951

14. London, 1953

15. Faber and Faber, London, 1953; and Harper and Row, New York, 1975.

16. London, 1959, reprint, Perennial Books London, 1982.

17. London, 1965

18. For Titus Burckhardt's thought see his posthumous work, *Mirror of the Intellect: Essays on Traditional Science and Sacred Art*, (Cambridge: Quinta Essentia, 1987), see also his *Art of Islam* (London: World of Islam Festival, 1976)

19. For A.K. Coomaraswamy's ideas see his *Selected Papers-Traditional Art and Symbolism*, (Princeton, 1977),

20. For Martin Ling's thought See *A Sufi Saint of the Twentieth Century*, (Berkeley, 1973) and *What is Safusn?* (Berkeley, 1977).

21. See his rather pedestrian new book, *The Islamic Tradition: An Introduction*, (New

York: Amity House, 1988)

22. For a flavour of Needleman's ideas see his edited work *The Sword of Gnosis*, (London: Penguin, 1974).

23. Gai Eaton's philosophy is outlined in *The King of the Castle* and *Islam and the Destiny of Man*, Albany.

24. Ali Ashraf and Hadi Sharifi are at the Islamic Academy in Cambridge.

25. The 'Christic embodiment' that Massignon represents is well described by Nasr in *Traditional Islam in the Modern World*, (London: KPI, 1987), chapter 15.

26. For Corbin's worldview see his *Cyclic Time and Ismaili Gnosis*, (London: KPI, 1983).

27. Nasr, *Knowledge and the Sacred*, (Edinburgh University Press, 1981), p.ix. See also Mohammad Salman Raschid's dissection of this book in 'Phisosophia Perennis Universale Imperium', *Religion*, 13, 155-171 (1983). Raschid concludes: 'As a Muslim I am bound to say that Professor Hossein Nasr's book cannot be read as Muslim statement since it does not represent the ex-pression of Islamic (i.e. Qur'anic) ideas. It is rather based upon a confused mixture of what could be characterised as 'Neoplatonized Semitic Theism with an admixture of distroted Vedanta'. If this sounds like an extraordinary incoherent formulation I submit that it is a direct reflection of the basic incoherence in Nas's whole case'. (p.170)

28. *ibid.* p.107. Is he describing a man or a god?

29. *ibid.* p.137

30. *Islamic Science: An Illustrated Study*, (London: World of Islam Festival, 1976) p.28

31. *ibid.* p. 31

32. *ibid.* p. 31, 36

33. *ibid.* p. 36

34. See *The Golden Verses of Pythagoras*, (London: Concord Grove Press, 1983). p.20

35. See *Hermitica* edited and translated by Walter Scott, (Boston: Shambhala, 1985) (3 vols) (original edition, 1926)

36. Aristotle's *Physics*, Books I and II translated and edited W Charlton, (OUP, 1970), Books III and IV translated and edited by A Hussey, (OUP, 1983).

37. A penguin edition was published in 1986.

38. *ibid.* p 83

39. *ibid.* p.79

40. *ibid.* p.84

41. *ibid.* p.126, 127

42.

See his catalogue of absurdities found in Islamic Science in *Journal for the History of Astronomy*, ix, 212-219 (1978)

43. *Islamic Science.* p. 135-136

44. *ibid.* p. 54-56

45. *ibid.* p.68