

Alhassanain (p) Network for Islamic Heritage and Thought

The Holy Quran and The Sciences of Nature

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Preface

The three essays assembled here are based on lectures delivered by the author on three different occasions. They are united in which they all concern the Holy Qur'an and the sciences of nature.

The first essay deals with the Islamic conception of knowledge. There I have tried to show Islam's recommendation for the acquisition of knowledge is not restricted to the particular teachings of Shari'ah, but it applies to any kind of knowledge which is instrumental in bringing us closer to God. All sciences, whether theological or physical, are a means for obtaining proximity to God, and, as long as they play this role, they are sacred.

In the second essay, I have tried to spell out the reasons from the desirability of the physical and natural sciences in Islamic outlook. There, we find two fundamental reasons for the significance of these sciences in Islamic world-view:

1. The role of these sciences in knowing God.
2. The role of these sciences in the stability and glorification of the Muslim Ummah.

The third essay deals with some basic problems of epistemology from the Qur'anic view-point. This is an area in which very little work is done, and here our concern is to stimulate Muslim scholars to spend more time and energy on this subject of fundamental importance.

I hope and pray these essays may be a humble aid in stimulating further research in this area, in the revival of scientific spirit in the Ummah, and in promoting scientific knowledge in the Muslim world.

Mahdi Golshani

Part 1: Science and the Muslim Ummah

Islamic Conception of Knowledge

One of the distinctive features of Islam is its emphasis on knowledge. The Qur'an and the Islamic tradition (Sunnah) invite Muslims to seek and acquire knowledge and wisdom and to hold people of knowledge in high esteem. Some of the Qur'anic verses and relevant traditions will be mentioned in the course of our discussion.

At the outset we may recall a famous hadith of the Holy Prophet - upon whom be Allah's peace and benedictions - which has come down through various sources; it says:

طلب العلم فريضة على كل مسلم

“Acquisition of knowledge is incumbent on every Muslim.”¹

This tradition brought up the discussion as to what kind of knowledge a Muslim should necessarily acquire - an issue around which various opinions were offered in the past.

Abu Hamid al-Ghazali (d. 1111 A.D.), in his famous book *Ihya 'Ulum al-Din* (The Revival of Religious Sciences), mentions he had come across 20 different answers to the above question.² The theologians considered the learning of Islamic theology (kalam) was an obligation, while the jurists (fuqaha') thought Islamic jurisprudence (fiqh) was implied in the prophetic tradition.

Al-Ghazali himself favoured the view in which the knowledge whose acquisition is a religious obligation is limited to what one must know for correct performance of the acts obligatory for a person within the framework of the Islamic Shari'ah.³ For instance, one whose occupation is animal husbandry should acquaint themselves with the rules concerning zakat. If one were a merchant doing business in a usurious environment, they ought to be aware of the religious injunction against usury (riba) so as to be able to effectively avoid it.

Al-Ghazali then proceeds to discuss sciences whose knowledge is wajib kifa'i⁴ (something which is obligatory for the whole society as long as the duty for fulfillment of a social need exists, but as soon as the duty is shouldered by enough number of individuals, others are automatically relieved of the obligation). Subsequently, he classifies all knowledge into “religious” and “non-religious” sciences. By “religious sciences” ('ulum al-shar') he means the bulk of knowledge imparted through the prophetic teachings and the revelation. The rest constitute the “non-religious” sciences.

The non-religious sciences are further classified into “praiseworthy (mahmud), “permissible” (mubah) and “undesirable” ones (mudhmun). He puts history in the category of permissible sciences (mubah) and magic and sorcery in the category of the undesirable fields of “knowledge.” The “praiseworthy” sciences (mahmud), whose knowledge is necessary in the affairs of life are wajib kafa'i, the rest of them being additional merit to the learned who pursue them. He puts medicine, mathematics and crafts, whose sufficient knowledge is needed by society, in the category of sciences which are wajib kifa'i. Any further research into the detail and depth of problems

of medical science or mathematics is put by al-Ghazali in the second category which involves merit for the scholar without entailing any manner of obligation.

Al-Ghazali classifies the religious sciences also into two groups: praiseworthy (mahmud) and undesirable (madhmum). By “undesirable religious sciences” he means those which are apparently oriented towards the Shari‘ah but actually deviate from its teachings. He sub-divides the “praiseworthy religious sciences” into four groups:

1. Usul (principles, i.e. the Qur’an, the sunnah, ijma or consensus and the traditions of the Prophet’s companions).

2. Furu‘ (secondary or derived matters, i.e. problems of jurisprudence, ethics and mystical experience)

3. Introductory studies (Arabic grammar, syntax, etc.)

4. Complementary studies (recitation and interpretation of the Qur’an, study of the principles of jurisprudence, ‘ilm al-rijal or biographical research about narrators of Islamic traditions, etc.)

Al-Ghazali considers the knowledge of the disciplines contained in the above four groups to be wajib kafa’i.

As to the extent to which one should learn the “praiseworthy” sciences, al-Ghazali’s view is in matters of theology such as knowledge of God, Divine qualities, acts and commands, one should try to learn as much as possible. However, as to religious topics whose knowledge is wajib kifa’i, one should learn as much as is sufficient. Here the summary of his views is one should not pursue learning of those sciences if there are already others devoting themselves to their study, and if one were to do so, they should refrain from spending all their lives for their learning, “for knowledge is vast and life is short. They are preliminaries and not the end in themselves.”⁵

As to theology (kalam), his opinion is only as much of it as is corroborated by the Qur’an and hadith is beneficial. Moreover, he says, “Now the heretics attempt to induce doubts (in the minds of unsophisticated believers), adequate knowledge of theology is necessary to confront them.”

Regarding philosophy, al-Ghazali thinks it is distinguishable into four parts:⁶

1. Arithmetic and geometry, which are legitimate and permissible.

2. Logic, which is a part of theology.

3. Divinities, which discusses Divine Essence and Attributes and is also a part of theology.

4. Physics, which may be divided into two sections: One part which involves discussions opposed the Shari‘ah and accordingly cannot even be considered a “science”; the other part discusses the qualities of bodies. The second part is similar to the science of medicine, although medicine is preferable to it. This section of physics is useless while medicine is useful.

Mulla Muhsin Fayd al-Kashani, in his book Mahajjat al-Bayda,⁷ says, “It is a personal obligation (wajib ‘ayni) of every Muslim to learn Islamic jurisprudence to the extent of their needs. Further, learning of fiqh to fulfil the need of other is wajib kifa’i for them.”

Regarding philosophy, Kashani says,⁸ “The components of philosophy are not the only ones distinguished by Abu Hamid (al-Ghazali) - upon who be God’s mercy. Philosophy covers many other fields of religious and mundane matters (for example, astronomy, medicine and rhetoric etc.)...Whatever of these sciences which is about the Hereafter exists to the point of perfection in the Shari‘ah and which is not useful for the Hereafter is not needed; moreover, it may even hinder the pursuit of the path of Allah. In the case of those portions which are effective for the knowledge of the Divine but are not elaborated by the Shari‘ah (like astronomy), it is sufficient to be satisfied with the simple unelaborated discussions of the Shari‘ah about such matters.”⁹

In brief, in Kashani’s opinion, anyone who wishes to learn these sciences should first acquaint himself with the religious sciences.

Sadr al-Din Shirazi (Mulla Sadra) in his commentary on Usul al-Kafi regards al-Ghazali’s limitation of obligatory knowledge for a Muslim to the matters of ritual practice and legitimate dealings as unacceptable.¹⁰ In his opinion, learning of religious sciences (such as tawhid, divine attributes and acts) and human sciences (such as dispositions of the soul, its delights and afflictions) are also obligatory for the majority of human beings.

Secondly, he believes it is not at all essential with what is obligatory (wajib ‘ayni) for all to learn should apply identically in case of every individual and what is obligatory for one individual be regarded as being equally obligatory for another.

Here, it seems appropriate to mention a few points discussed by Sadr al-Din Shirazi in his commentary on Usul al-Kafi in relation to tradition:

طلب العلم فريضة على كل مسلم

“Acquisition of knowledge is incumbent on every Muslim.”

1. The word ‘ilm (knowledge or science), like the word “existence” (wujud) has a broad range of meanings which vary from viewpoints of strength or weakness, perfection or deficiency.¹¹ The word’s generic sense covers this whole spectrum of meanings in which it has been used in the prophetic tradition. This broad sense of the word ‘ilm is common to all its varied meanings.

Accordingly, the tradition intends to state at whatever stage of knowledge one may be, he should strive to make further advance. The Prophet means acquisition of knowledge is obligatory for all Muslims, scholars as well as ignorant people, beginners as well as learned scholars. Whatever stage of knowledge people may attain, they are still like children entering into adulthood, i.e. they should learn things which were not obligatory for them earlier.

2. The tradition implies a Muslim can never be relieved of their responsibility of acquiring knowledge.¹²

3. No field of knowledge or science is undesirable or detestable in itself, for knowledge is like light and so it is always desirable. The reason some of the sciences have been regarded as “undesirable” is because of the undesirable effects they produce.¹³

Here we do not intend to enter into a discussion about sciences whose learning is obligatory (wajib ‘ayni) for every responsible (mukallaf) Muslim individual. Rather, we propose to discuss those sciences whose knowledge is a wajib kifa’i for all Muslim Ummah. However, before we start to discuss the latter group it seems fruitful to mention briefly our view about the former group (i.e. wajib ‘ayni group). Our view in this matter is the same as that of ‘Allamah Fayd Kashani, as expressed in his book “al-Wafi”:

“The knowledge which is incumbent on every Muslim to acquire is the one which elevates a person’s position in the next world, and which brings him the knowledge of themselves, their Creator, prophets, messengers of God, elite of Islam, signs of God, doomsday, and whatever causes proximity of God or divergence from the Almighty’s way. The levels of acquisition of this knowledge differ from person to person in accordance with their talents, and even in the case of a particular person, the level of attainment changes with their evolution. Therefore, there is no limit to the acquisition of this type of knowledge, and no matter what level one reaches, it is still incumbent on them to attain a higher level (this of course depends on their capacity and patience, too).”

In the case of sciences which belong to the category of “Wajib-Kifa’i,” we find some of the views of Imam Ghazali and ‘Allamah Kashani disputable:

1. We do not approve of their classification of sciences into “religious” and “non-religious.” As the Martyr Professor Murteda Mutahhari has rightly pointed out, such classifications may entail the misconception in which the “non-religious” sciences are alien to Islam, and this seems incompatible with the universality of Islam - the religion which claims to bestow full felicity upon humankind. A religion which considers itself self-sufficing cannot estrange itself from the issues which play a vital role in securing welfare and independence for the Islamic society. According to the late Mutahhari:

“Islam comprehensiveness and finality as a religion demands every field of knowledge is beneficial for an Islamic society be regarded as part and parcel of the ‘religious sciences.’”¹⁴

Besides, we think the group of sciences belonging to the category of wajib kifa’i is much larger than what al-Ghazali would have us believe. Moreover, we think the parsimony he shows regarding those sciences which may be included in this category, does not harmonize with the teachings of the Qur’an and the Islamic Sunnah. Our reasons for not accepting such restrictions on learning are as follows:

1. In most of the Qur’anic verses and the Islamic traditions, the concept of ‘ilm (knowledge appears in its absolutely general sense, as can be seen from examples given below:

قُلْ هَلْ يَسْتَوِي الَّذِينَ يَعْلَمُونَ وَالَّذِينَ لَا يَعْلَمُونَ

“Say, “Are those who know and those who do not know alike?” (39:9)

عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ

(God) taught man what he knew not. (96:5)

وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى الْمَلَائِكَةِ فَقَالَ أَنْبِئُونِي بِأَسْمَاءِ هَؤُلَاءِ إِنْ كُنْتُمْ صَادِقِينَ

And He taught Adam all the names, then showed them to the angels saying, "Tell me the names of these, if you are right." (2:31)

وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلَيْهِم

"...and above everyone possessed of knowledge is the All-knowing one." (12:76)

وَمِنْكُمْ مَنْ يُرَدُّ إِلَىٰ أَرْدَلِ الْعُمْرِ لِكَيْ لَا يَعْلَمَ بَعْدَ عِلْمٍ شَيْئًا

"...and of you is he who is brought back to the worst part of life, so after having knowledge he does not know anything..." (16:70)

The Prophet's tradition:

من سلك طريقا يطلب فيه علماً سهل الله له طريقا إلى الجنة

"Anyone who pursues a course in search of knowledge, God will ease his way to paradise."¹⁵

2. Some Qur'anic verses and the Prophet's traditions are explicit in pointing out knowledge does not mean only learning the principles and laws of religion. As examples, we cite some of them here:

وَلَقَدْ آتَيْنَا دَاوُودَ وَسُلَيْمَانَ عِلْمًا وَقَالَا الْحَمْدُ لِلَّهِ الَّذِي فَضَّلَنَا عَلَىٰ كَثِيرٍ مِّنْ عِبَادِهِ الْمُؤْمِنِينَ وَرَتَّبْنَا دَاوُودَ الْفُلَّ وَالسُّلَيْمَانَ السُّلَيْمَانَ وَقَالَ يَا أَيُّهَا النَّاسُ عَلِّمْنَا مَنَاطِقَ الطَّيْرِ وَأُوتِينَا مِنْ كُلِّ شَيْءٍ إِنَّ هَذَا هُوَ الْفَضْلُ الْمُبِينُ

a) "And certainly We gave knowledge to Dawud and Suleiman, and they both said, 'Praise be to Allah, who has made us to excel many of His believing servants. And Suleiman was Dawud's heir, and he said, 'Oh men, we have been taught the language of birds, and we have been given all things, most surely this is manifest grace.'" (27:15 - 16)

We see Solomon considers knowing the language of birds as a divine blessing or grace.

أَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ ثَمَرَاتٍ مُّخْتَلِفًا أَلْوَانُهَا ۗ وَمِنَ الْجِبَالِ جُدَدٌ بَيضٌ وَحُمْرٌ مُّخْتَلِفٌ أَلْوَانُهَا وَعَرَابِيٌّ سُودٌ وَمِنَ النَّاسِ وَالدَّوَابِّ وَأَلْأَنْعَامِ مُخْتَلِفٌ أَلْوَانُهُ كَذَلِكَ ۗ إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاءُ ۗ إِنَّ اللَّهَ عَزِيزٌ غَفُورٌ

b) Do you not see God sends down water from the sky, then We bring forth with it fruits of various colours, and in the mountains are streaks, white, red and various colours and others intensely black? And of men and beasts and cattle are of various colours likewise, only those of His servants endowed with knowledge fear God. Surely, God is Almighty and Forgiving. (35:27 - 28).

Clearly the world 'Ulama (possessor of knowledge) in the above verse refers to those who, being aware of the laws of nature and mysteries of creation, bow humbly to the grandeur and majesty of God.

وَمَا عَلَّمْنَاهُ الشِّعْرَ

c) *“And we have not taught him poetry.” (36:69)*

d) In the Qur’an there is a reference to Qaroun as saying:

قَالَ إِنَّمَا أُوتِيْتُهُ عَلَىٰ عِلْمٍ عِنْدِي

He said, “I have been given this only on account of the knowledge I have.” (28:78)

e) Traditions of the following kind:

اطلبوا العلم ولو بالصين ، فإن طلب العلم فريضة على كل مسلم

Seek knowledge by even going to China, for seeking knowledge is incumbent on every Muslim.”¹⁶

اعلم الناس من جمع علم الناس إلى علمه...وأكثر الناس قيمة أكثرهم علماً وأقل الناس

قيمة أقلهم علماً

“The most learned of men is the one who gathers knowledge from others on his own, the most worthy of men is the most knowing and the meanest is the most ignorant.”¹⁷

“Wisdom is the believer’s lost property, therefore, wherever he finds it, he deserves more than anyone else to have it.”¹⁸

The above-mentioned traditions have been reported from the Holy Prophet (S) and narrations such as the following are reported from Imam ‘Ali (A.S.):

الحكمة ضالة المؤمن فحيث وجدها فهو أحق بها

“Wisdom is the lost property of believers, and then seek it even if it be with polytheists, because you deserve to have it more than they do.”¹⁹

خذ الحكمة ممن أتاك بها وانظر إلى ما قال ولا تنظر إلى من قال

“Grasp wisdom from whoever offers it to you; see what is said not who says it.”²⁰

All these sayings indicate acquisition of knowledge is not confined to learning the principles and laws of religion, because it is quite obvious China in those days was not the centre of theological studies, but it was famous for its industry. Moreover, it is clear the laws and principles of Islam could not be learnt from atheists or polytheists.

2. Another reason for believing the “desirable” knowledge is confined to theological studies or the Shari‘ah laws dealing with permissible and forbidden is the invaluable heritage itself left by Muslim scholars of the first few centuries after Hijrah. It is also confirmed by contemporary historians in Muslim scholars have been the torch bearers of science for many centuries, and their works were used as textbooks in Europe for several hundred years.

In fact, a major reason why Muslim scholars assimilated the scientific heritage of other nations was they did not see any conflict between the goals of science and religion, and were convinced both religion and science aimed to demonstrate the unity of nature which in turn is an indication of the Unity of its Creator. It was for this very reason theology and rational and physical

sciences made up a conjoint discipline to be taught in theological schools and mosques.

3. To set aside a group of sciences on the pre-text in which they do not have as much value as the religious studies is not correct. Because, whatever field of knowledge is conducive to preservation of the strength and vitality of an Islamic society, its knowledge is wajib kifa'i in the same fashion as scholarship in religious sciences has been pointed out as a wajib kifa'i for the Islamic society in the following verse of the Qur'an:

وَمَا كَانَ الْمُؤْمِنُونَ لِيَنْفِرُوا كَافَّةً ۚ فَلَوْلَا نَفَرَ مِنْ كُلِّ فِرْقَةٍ مِنْهُمْ طَائِفَةٌ لِيَتَفَقَّهُوا فِي الدِّينِ
وَلِيُنذِرُوا قَوْمَهُمْ إِذَا رَجَعُوا إِلَيْهِمْ لَعَلَّهُمْ يَحْذَرُونَ

“It is not for the believers to go forth totally (to acquire scholarship in religion), but why should not a party of every section of them go forth, to become learned in religion, and to warn their people when they return to them which haply they may beware? (9:122)

Hence, we may conclude the word ‘ilm as it occurs in the Qur'an and Sunnah appears in its generic sense rather than referring exclusively to religious studies. On this ground it can be said Islam has only dissuaded Muslims from pre-occupying themselves with any pursuit of such branches of knowledge whose harm is greater than their benefit (like magic and sorcery and games of chance used for gambling). The relevant sayings of the Prophet (s) may be noted:

خير العلم ما نفع

“The best fields of knowledge are those which bring benefit.”²¹

اللهم انفعني بما علمتني وعلمني ما ينفعني وزدني علماً

Oh God, benefit me through knowledge which you have bestowed on me, teach me whatever would benefit me, and increase my knowledge.”²²

‘Ali (A.S.) is related as having said:

لا خير في علم لا ينفع

There is no good in knowledge which does not benefit.²³

العلم أكثر من أن يُحاط به ، فخذوا من كل علم أحسنه

Knowledge is too immense in scope for anyone to be able to learn all of it. So learn from each science its useful parts.²⁴

There is no division of opinion on the necessity of acquiring knowledge relevant to religious studies. Accordingly, we shall abstain from any further discussion of the subject.²⁵ Instead, it is worthwhile to concentrate on the question of necessity of learning other sciences in the view of the Qur'an and Sunnah. In this regard, there are a number of arguments which we shall take up immediately.

1. If knowledge of science is a pre-requisite to the attainment of Islamic goal as envisaged by the Shari'ah, its pursuit is an obligation (wajib) since it entails the preliminary condition for fulfillment of a duty prescribed by the Shari'ah. For example, the physical welfare of individuals in an Islamic society is necessary; hence, it is a wajib kifa'i for the Muslims to study medicine.

Some are of the opinion in which this context is the duty to learn any specific science depends on the need of the society for it. For example, in our day, in order to succeed in large-scale agriculture or commerce, specialized knowledge of these subjects is necessary. Accordingly, it is a wajib kifa'i for Muslims to specialize in these fields.

Evidently, if Muslims are to restrict their learnings to what has already been established in other countries, in other words, to be satisfied with the minimum of their scientific requirements, they will never be able to bear the non-Muslim world in scientific progress.

2. The society envisioned by the Qur'an is an independent society of majesty and grandeur, not one subservient to and dependent on the unbelievers, as can be seen from this verse of the Qur'an:

وَلَنْ يَجْعَلَ اللَّهُ لِلْكَافِرِينَ عَلَى الْمُؤْمِنِينَ سَبِيلًا

"...and Allah does not grant the unbelievers any way (of domination) over the believers." (4:141)

In order to realize this goal set by the Qur'an, it is essential the Islamic society should have cultural, political and economic independence; this in turn necessitates training of specialists of high calibre in every field and creation of the necessary scientific and technical facilities in Islamic societies. It is clear one of the reasons of decline of Muslim societies in recent centuries is they left the study of those sciences to others which they themselves deserved to study most, and made themselves dependent on others.

Should not the Muslims equip themselves in every way to defend themselves against the non-believers as stressed by the following verse?

وَأَعِدُّوا لَهُمْ مَا اسْتَطَعْتُمْ مِنْ قُوَّةٍ وَمِنْ رِبَاطِ الْحَيْلِ تُرْهَبُونَ بِهِ عَدُوَّ اللَّهِ وَعَدُوَّكُمْ

"And prepare against them what force you can...so you may dismay the enemy of God and your enemy and others beside them whom you know not, God knows them. Whatever you spend in the way of God it will be repaid to you in full, and you will not be cheated." (8:60)

And it is not true, in our world today, possession of defence equipments to face the enemies of Islam requires all kinds of scientific and technical know how? Then why do not the Muslims give the necessary attention to the issue of preparing themselves adequately for their self-defence?

In our Modern age, human life is inextricably linked with the effort for scientific advancement and the key to success in all affairs lies in knowledge. It is, therefore, an obligation of Muslim scholars and researchers, living in the countries of either the Eastern or Western block and is engaged in education, to acquire the latest and most complete scientific and technical knowledge. Otherwise, their societies will inevitably remain under the domination of one super-power or another. Imam Ja'far al-Sadiq (a.s.) says:

العلم بزمانه لا تهجم عليه اللوابس

A man who is abreast of his time will not be overwhelmed by unexpected problems.²⁶

To sum up, if Muslims want to succeed in their struggle against the evil powers of this age, they should equip themselves with the essentials of scientific advancement and endeavour to make up their lag in scientific and technical fields. Whatever subject is essential for safe-guarding the existence and vitality of the Islamic societies should be learnt.

3. The Holy Qur'an invites humankind to study the system and scheme of creation, the wonders of nature and the causes and effects of all things which exist, the conditions of living organisms, and in short, all signs of God discernible in the external universe and the inner depths of the human soul. The Qur'an enjoins thought and meditation on all aspects of creation and requires human beings to apply their reasons and faculties to the discovery of the secrets of nature. We shall quote here a few verses:

أَفَلَمْ يَنْظُرُوا إِلَى السَّمَاءِ فَوْقَهُمْ كَيْفَ بَنَيْنَاهَا وَزَيَّنَّاهَا وَمَا هِيَ مِنْ فُرُجِ الْأَرْضِ مَدَدْنَاهَا
وَأَلْقَيْنَا فِيهَا رَوَاسِيَ وَأَنْبَتْنَا فِيهَا مِنْ كُلِّ زَوْجٍ بَهِيجَتَبَصْرَةً وَذَكَرَى لِكُلِّ عَبْدٍ مُنِيبٍ

What, have they not beheld heaven above them, how We have built it, and decked it out fair, and it has no cracks? And the Earth - We stretched it forth, and cast on it firm mountains, and We caused to grow therein of every joyous kind for insight and a reminder to every penitent servant.
(50:6 - 8)

وَإِلَى السَّمَاءِ كَيْفَ رُفِعَتْ إِلَى الْجِبَالِ كَيْفَ نُصِبَتْ إِلَى الْأَرْضِ كَيْفَ سُطِحَتْ فَذَكِّرْ إِمَّا أَنْتَ
مُذَكِّرٌ

What, do they not consider how the camel was created, how heaven was lifted up, how the mountains were hoisted, how the earth was outstretched?" (88:18 - 21)

قُلْ سِيرُوا فِي الْأَرْضِ فَانظُرُوا كَيْفَ بَدَأَ الْخَلْقَ ۚ ثُمَّ اللَّهُ يُنشِئُ النَّشْأَةَ الْآخِرَةَ ۚ إِنَّ اللَّهَ عَلَىٰ
كُلِّ شَيْءٍ قَدِيرٌ

Say, "Journey in the land, then behold how He originated creation, then God causes the second growth, God is powerful over everything."
(29:20)

وَفِي الْأَرْضِ آيَاتٌ لِلْمُوقِنِينَ ۚ أَنْفُسِكُمْ ۚ أَفَلَا تُبْصِرُونَ

In the earth are signs for those having sure faith, and in yourselves; what, do you not see?" (51:20 - 21)

إِنَّ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ وَاجْتِذَافِ اللَّيْلِ وَالنَّهَارِ لآيَاتٍ لِّأُولِي الْأَلْبَابِ الَّذِينَ يَذْكُرُونَ
اللَّهَ قِيَامًا وَقُعُودًا وَعَلَىٰ جُنُوبِهِمْ وَيَتَفَكَّرُونَ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَذَا
بِاطِلًا سُبْحَانَكَ فَقِنَا عَذَابَ النَّارِ

Surely in the creation of the heavens and the Earth and in the alternation of the night and day there are signs for men possessed of minds who remember God, standing and sitting and on their side, and reflect upon the creation of the heavens and on earth, "Oh Lord, Thou hast not created this out of falsehood. Glory be to Thee! Guard us against the chastisement of the fire. (3:190 - 191)

إِنَّ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ وَالْفُلْكِ الَّتِي تَجْرِي فِي الْبَحْرِ بِمَا يَنْفَعُ النَّاسَ وَمَا أَنْزَلَ اللَّهُ مِنَ السَّمَاءِ مِنْ مَاءٍ فَأَحْيَا بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا وَبَثَّ فِيهَا مِنْ كُلِّ دَابَّةٍ وَتَصْرِيفِ الرِّيَّاحِ وَالسَّحَابِ الْمُسَخَّرِ بَيْنَ السَّمَاءِ وَالْأَرْضِ لآيَاتٍ لِقَوْمٍ يَعْقِلُونَ

Surely in the creation of the heavens and the earth and the alternation of night and day and the ship that runs in the sea with profit to men, and the water God sends down from heaven therewith reviving the earth after it is dead and His scattering abroad in it all manner of crawling thing, and the turning about of the winds and clouds compelled between heaven and earth - surely there are signs for a people having understanding. (2:164)

As can be seen from the foregoing verses, God refers to all existing things in the universe as the “signs” of their Creator, and the system of the universe as the imprint of an omniscient designer and programmer. The study of the universe and what exists in it is considered one of the most important means for knowledge of God and recognition of the majesty of its Creator. Prophets also based their invitation to belief on this point. Prophet Moses (a.s.) makes a similar argument in his confrontation with Pharaoh. The Qur’an quotes Moses as putting his argument in these words:

قَالَ رَبُّنَا الَّذِي أَعْطَى كُلَّ شَيْءٍ حَلْقَهُ ثُمَّ هَدَانَا الَّذِي جَعَلَ لَكُمُ الْأَرْضَ مَهْدًا وَسَلَكَ لَكُمْ

فِيهَا سُبُلًا وَأَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ أَزْوَاجًا مِنْ نَبَاتٍ شَتَّى

He said, “Our Lord is he who gave everything its creation, then guided it...he who appointed the Earth to be a cradle for you, and therein threaded roads for you and sent down water out of heaven, and therewith We have brought forth diverse kinds of plants.” (20:50 - 53)

Prophet Noah (a.s.) is quoted in the Qur’an as saying to his people:

قَالَ رَبِّ إِنِّي دَعَوْتُ قَوْمِي لَيْلًا وَنَهَارًا قَالَ رَبِّ إِنِّي دَعَوْتُ قَوْمِي لَيْلًا وَنَهَارًا أَلَمْ تَرَوْا كَيْفَ خَلَقَ اللَّهُ سَبْعَ سَمَاوَاتٍ طِبَاقًا وَجَعَلَ الْقَمَرَ فِيهِنَّ نُورًا وَجَعَلَ الشَّمْسَ سِرَاجًا وَاللَّهُ أَنْبَتَكُمْ مِنَ الْأَرْضِ نَبَاتًا ثُمَّ يُعِيدُكُمْ فِيهَا وَيُخْرِجُكُمْ إِخْرَاجًا وَاللَّهُ جَعَلَ لَكُمْ الْأَرْضَ بِسَاطًا لِتَسْلُكُوا مِنْهَا سُبُلًا فِجَاجًا

He said, “My Lord, I have called my people by night and by day, but my calling has only increased them in flight...and I said, ‘Ask for forgiveness of your Lord, surely He is ever All forgiving...What ails you in which you look not for majesty in God, seeing He created you by stages? Have you not regarded how God created seven heavens one upon another, and set the moon therein for a light and the sun for a lamp? And God causes you to grow out of the Earth, then He shall return you into it, and bring you forth. And God has laid the earth for you as a carpet, and thereof you may tread ways, ravines.’” (17:5 - 20)

Obviously, it is not for everyone to be able to read the “book” of the universe. The Qur’an considers only people of knowledge to be capable of benefiting from the book of nature as can be seen from the following verse:

لَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ ثَمَرَاتٍ مُخْتَلِفًا أَلْوَانُهَا ۗ وَمِنَ الْجِبَالِ جُدَدٌ
بَيْضٌ وَحُمْرٌ مُخْتَلِفٌ أَلْوَانُهَا وَعَرَايِبُ سُودٌ وَمِنَ النَّاسِ وَالْأَنْعَامِ وَالْأَنْعَامِ مُخْتَلِفٌ أَلْوَانُهُ كَذَلِكَ ۗ
إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاءُ ۗ إِنَّ اللَّهَ عَزِيزٌ غَفُورٌ

Has thou not seen how God sends down out of Heaven water, and therewith We bring forth fruits of diverse hues? And in the mountains are streaks white and red, of diverse hues, and pitch black, men too, and beasts and cattle, diverse are their hues. Even so only those of His servants fear God who has knowledge, surely God is Almighty, All-forgiving. (35:27 - 28)

The Qur'an regards only people of knowledge as being capable of discerning the majesty and magnificence of God's creation and as possessing the humility produced by their knowledge of Divine power and greatness. This point is stressed in other verses of the Qur'an:

وَتِلْكَ الْأَمْثَالُ لِنَاسٍ ۗ وَمَا يَعْقِلُهَا إِلَّا الْعَالِمُونَ

And these similitudes - We strike them for the people, but none understands them save those who know. (29:43)

بَلْ هُوَ آيَاتٌ بَيِّنَاتٌ فِي صُدُورِ الَّذِينَ أُوتُوا الْعِلْمَ ۗ وَمَا يَجْحَدُ بِآيَاتِنَا إِلَّا الظَّالِمُونَ

Nay, rather it is signs, clear signs in the breasts of those who have been given knowledge, and none denies Our signs but the evildoers. (29:49)

Obviously, as implied by the above-mentioned verses, understanding of the "signs" of the Creator is considered possible only for the learned and the people of wisdom who have strived to fathom the secrets of nature and have acquired knowledge in their fields of study. Otherwise, only a superficial acquaintance with the "book of creation" is not very revealing.

A suitable initiation into this book of nature can only be achieved through such sciences as mathematics, physics, chemistry, astronomy, botany, and zoology (which we shall refer to as "natural sciences"). It is with the aid of these and the rational sciences we discover the laws of nature and unravel the wonderful order and scheme of creation which underlies nature. It is in this light we should read the verses of the Qur'an as the following:

فَارْجِعِ الْبَصَرَ هَلْ تَرَى مِنْ فُطُورِهِمْ ۖ ارْجِعِ الْبَصَرَ كَرَّتَيْنِ يَنْقَلِبْ إِلَيْكَ الْبَصَرُ حَاسِئًا وَهُوَ

حَسِيرٌ

Thou see not in the creation of the All-merciful any imperfection. Return thy gaze, sees thou any fissure? Then return thy gaze, and again, and thy gaze comes back to thee dazzled, weary. (67:3 - 4)

It means the further does human knowledge make progress in understanding God's creation, the more His Greatness and Majesty will become obvious to men. Consider the following verse:

سُنُرِبِهِمْ آيَاتِنَا فِي الْأَفَاقِ وَفِي أَنْفُسِهِمْ حَتَّىٰ يَتَّبِعِنَ لَهُمْ أَنَّهُ الْحَقُّ

We shall show them our signs in the horizons and in themselves, until it is clear to them He is the truth." (41:53)

and acquire the power and wisdom befitting his role as a “deputy” of God and a “sign” of His wisdom and omnipotence:

وَهُوَ الَّذِي جَعَلَكُمْ خَلَائِفَ الْأَرْضِ وَرَفَعَ بَعْضَكُمْ فَوْقَ بَعْضٍ دَرَجَاتٍ لِيُبْلُوَكُمْ فِي مَا آتَاكُمْ ۗ إِنَّ رَبَّكَ سَرِيعُ الْعِقَابِ وَإِنَّهُ لَعَزِيزٌ رَحِيمٌ

It is he who has appointed you viceroys on the earth, and has raised some of you in ranks above others, so He may try you in what He has given you. Indeed your Lord is quite in retribution, and He is Forgiving and Merciful. (6:165)

In fact, this station of being God’s viceroy or deputy upon the Earth has been bestowed upon humans as a result of his capacity of acquisition of knowledge as borne out by this verse:

وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى الْمَلَائِكَةِ فَقَالَ أَنْبِئُونِي بِأَسْمَاءِ هَؤُلَاءِ إِنْ كُنْتُمْ صَادِقِينَ

“He taught Adam all the names, then presented them to the angels, and then He said, “Tell me the names of those if you are right.” (2:31)

So far, we have tried to prove the recommendation of the Qur’an and “Sunnah” concerning the acquisition of knowledge is not restricted to the particular teachings of Shari’ah, but it equally applies to any knowledge use for humankind. Now, we are going to set the criteria as to what sort of knowledge is useful. To do so, we have to find out and define what the obligation and goal of a Muslim in this earthly life is. The Qur’an says all return to the Creator.

أَلَا إِلَى اللَّهِ تَصِيرُ الْأُمُورُ

...To Allah do all affairs eventually return. (42:53)

And the purpose of creation of jinn and human beings is they worship and seek proximity to the Almighty:

وَمَا خَلَقْتُ الْجِنَّ وَالْإِنْسَ إِلَّا لِيَعْبُدُونِ

And I have not created jinn and men except they should serve Me. (51:56).

أُمُّرُوا إِلَّا لِيَعْبُدُوا اللَّهَ مُخْلِصِينَ لَهُ الدِّينَ وَمَا

And they were not enjoined anything except they serve Allah, being sincere to Him in obedience. (98:5)

Therefore, the main objective of humans should be seeking proximity to God and attaining His consent and his activities should be focussed in this direction. Anything which brings about this proximity or guides in this direction is praiseworthy. Thus, knowledge is useful only if it is an instrument for obtaining knowledge of God and His pleasure and proximity, otherwise, knowledge itself is an inscrutable veil (hijab-e-akbar), whether it is linked with the sciences of nature or the sciences of the Shari’ah. As Saadi has put it:

جزیاد دوست هرجه کنی عمر ضایع است جز سرّ عشق هرجه بکوئی بطالت است

سعدی بشوی لوح دل از نفس غیر او علمی که ره بحق نماید جهالت است

“Life is vain except when recalling Him,
No words are good but (uttering) secrets of love,
Sadi! Wash of your heart of all but Him,
The knowledge not leading to Him is ignorance.”

It is obvious in which worshipping God is not only through prayers, fasting and so on. In fact, any move in the direction of proximity to God is considered as worship. One of the means to help humans on their way towards God is knowledge, and of course, it is only in this case in which knowledge can be considered valuable. By the help of Knowledge a Muslim can gain proximity to God in various ways and manners.

First of all, they can increase their cognition of God.

Our great Prophet (S) is related to have said,

إن الله يطاع بالعلم وبعد العلم ، وخير الدنيا والآخرة مع العلم ، وشر الدنيا والآخرة مع

الجهل

“God can be worshipped and served by means of knowledge, bliss in this world and the Hereafter comes through knowledge, and adversity of this world and the Hereafter lies in ignorance.”²⁷

Secondly, they can effectively help in the advancement of Islamic society and realization of Islamic goals, “And the word of Allah is the highest.” (9:40).

A tradition has been quoted from our great Prophet (S):

من جاءه الموت وهو يطلب العلم يحيي به الإسلام كان بينه وبين الأنبياء درجة واحدة في

الجنة

Should death occur to a person who is learning knowledge with the purpose of reviving Islam, their position in Paradise will be (only) the stage below the prophets²⁸

Thirdly, they can guide other people. It is reported from our dear Prophet (S) as having said:

قال (ص): رحم الله خلفائي ، فليل ومن خلفاؤك يا رسول الله؟ قال: الذين يحبون سنتي

ويعلمونها عباد الله

“God will patronize my successors.” He was asked, “Who are your successors?” He answered, “Those who revive my traditions, and teach them to God’s servants.”²⁹

Fourthly, he can solve many problems of human society. Our great Prophet (S) is quoted as having said:

الخلق كلهم عباد الله ، فأحب الخلق إليه أنفعهم لعباده

“All people are God’s family. Among them, God’s favourites are those who are more useful to His family.”³⁰

The knowledge employed in the above mentioned ways deemed to be useful, otherwise, it would not have any real value:

ذَلِكَ بِأَنَّ اللَّهَ هُوَ الْحَقُّ وَأَنَّ مَا يَدْعُونَ مِنْ دُونِهِ الْبَاطِلُ

“This is because Allah is the truth, and which they call upon besides Him is falsehood...” (31:30).

Our Great Prophet (S) is related as having said:

من تعلم علماً لغير الله وأراد به غير الله فليتبوأ مقعده من النار

“He who learns knowledge for other than God, and his aim be other than God, will abide in fire (hell).”³¹

من ازداد علماً ولم يزد هدى لم يزد من الله إلا بُعداً

“One whose knowledge increases but his salvation does not keep pace with it has remoteness from God increases.”³²

إن الله عز وجل يقول: تذاكر العلم بين عبادي مما تحيي عليه القلوب الميتة إذا هم انتهوا

فيه إلى أمري

“God, the Most exalted, has said, ‘Knowledgeable discussions among my servants can enliven their hearts if it leads them towards my commands.’”³³

And any knowledge not helping man on his way to Allah is similar to the load of books carried on the back of a donkey:

مَثَلُ الَّذِينَ حُمِلُوا التَّوْرَةَ ثُمَّ لَمْ يَحْمِلُوهَا كَمَثَلِ الْحِمَارِ يَحْمِلُ أَسْفَارًا

The likeness of those who are charged with the Torah, then they did not observe it, is as the likeness of the as bearing books... (62:5)

Sayyid Qutb in his commentary on the verse (16:35) makes the following comment, “In this verse the kind or the subject matter of the knowledge has not been mentioned, for it considers knowledge in general. Moreover, it implies all kinds of knowledge are considered the gift of God, and any learned person should realize the origin of his knowledge and turn their face towards God to thank Him. They should also utilize it in attaining the consent of God, who has granted him knowledge.

“Therefore, knowledge should not stand between a person and the Creator, for knowledge is one of God’s gifts to humans. The knowledge which causes separation between person’s heart and God is nothing but aberration and has gone astray from its origin and is oblivious of the destination. It brings happiness neither to its possessor nor to others, and is only the cause of cruelty, fear, anxiety and destruction, because it has gone away and from its origin, deviated from its real direction, and has lost its way towards God.”³⁴

Hence we can infer the following conclusions:

a) All sciences, whether theological or natural are means for obtaining proximity to God, and as long as they play this role, they are sacred. But this sanctity is not intrinsic. As Martyr Dr. Beheshti puts it, “Any area of knowledge as long as it does not become an instrument in the hands of taghut (non-God or anti-God) is a means of enlightenment; otherwise, knowledge may also become a means of misguidance.”

b) In this perspective, various sciences are not alien to each other because, in their own way, they interpret the various pages of the book of creation to us.

As the eminent poet sage Sheikh Mahmud Shabistari says:

ينزد أنكه جانش در نجلي است
همه عالم كتاب حق تعالى است
از او هر عالمی چون سوره اي خاص
بکی زان فاتحه وان ديگر اخلاص

“To him, whose spirit is enlightened,
The entire universe is a sacred book of the Most High,
Every sphere of universe is a different chapter,
One sphere of universe is a different chapter,
One is the Opening Surah, and another the Surah of Ikhlas.”

In the pages of this Divine book, some chapters may have precedence and priority over others, but nevertheless, all of them are essential for the appreciation of God’s signs afaq (horizons) and anfus (souls), which is in the universe without and within.

In the early centuries of Islamic civilization, when it was at its peak, the Muslim intellectuals approached the question of learning with a vision similar to the one discussed above. Different sciences were seen in a single perspective and considered inter-related as branches of the “tree” of knowledge. The goal of all sciences was seen as discovery of unity and coherence of the world of nature. Accordingly, the source of all knowledge was considered to be one. They utilized the experimental as well as the intellectual and intuitive approaches for understanding of various levels and stages of existence.

During this period we find numerous examples of scholars who combined authority in religious sciences with encyclopedic knowledge of the natural sciences. Men like ibn Sina, ‘Umar Khayyam, Khwajah Nasir al-Din Tusi and Qutb al-Din Shirazi are some names among many. As long as this vision and perspective ruled Muslim scholarship and science, the Muslims were in the vanguard of human civilization and their cities were centres of specialized learning.

George Sarton admits in which during the period between A.D. **750** and **1100**, the Muslims were undisputed leaders of the intellectual world and between A.D. **1100** and **1350**, the centres of learning in the Muslim world retained their global importance and attraction. After **1350** the European world began to advance and the Islamic world not only became stagnant but also failed to absorb the progress made outside it. The theological schools excluded all natural sciences from their curriculum except classical astronomy and mathematics. This restriction led to grave repercussions for the Islamic world. Here we point out a few of these effects:

1. Whereas the Europeans were striving to unravel the hidden laws of nature and to discover ways of exploiting its treasures and resources, the Muslims set aside these activities, and left to others what they deserved to handle. Today, they have reached the point where they have to depend on America and Europe to satisfy their elementary needs. They remain largely unable to use their resources, which they continue to leave to foreigners to exploit.

2. Those Muslims who pursued the empirical sciences were mostly estranged from the religious sciences. As a result, they lacked the Islamic world outlook which was replaced by the atheistic vision which dominates the Western scientific tradition.

3. The elimination of the study of the natural sciences from the curricula of the religious madrasahs and the lack of direct touch with the sources of modern science on the part of religious scholars gave rise to the deviated intellectual currents in the Muslim world:

a) Some Muslims, under the influence of Western scientific and technical progress and without any knowledge of the limitations of empirical sciences, became singularly possessed with...to the extent in which they even tried to interpret the Qur'an and hadith according to their conjectures. The Qur'anic exegeses written by Tantawi and Sir Sayyid Ahmad Khan belong to this class. Others have gone still further claiming all the findings of modern sciences are found in the Qur'an and the texts of Islamic tradition (hadith). The claim, supposedly, was aimed at demonstrating the miraculous and divine nature of the Qur'an.³⁵

In the introduction to his exegesis of the Qur'an, Sheikh Mahmud Shaltut, the late head of al-Azhar University, writes, "God did not send down the Qur'an to inform humankind of scientific theories and technological techniques...If we try to attempt a conciliation between the Qur'an and tentative scientific hypotheses, we will thereby subject the Qur'an to reversals of times to which all scientific theories and hypotheses are prone. This would result in presenting the Qur'an in an apologetic and defensive perspective. Whatever is mentioned in the Qur'an about the mysteries of creation and natural phenomena is intended to impel humankind to speculation and inquiry into these matters so, thereby, their faith in it is enhanced."³⁶

b) Some scholars or religion considered scientific theories as opposed to the doctrines of religion and accordingly set out to attack science. This resulted in the repercussion in which many Muslims turned away from religion. Had the natural sciences not been exiled from the religious curricula, this tragedy would not have occurred. Any fruitful criticism of ideas based on scientific theories requires, in the first place, familiarity with the various disciplines of modern science, so any unwarranted conclusions derived from scientific finds may be properly exposed and rejected. How is it possible to claim the natural sciences result in a human's estrangement from God, when the Qur'an unambiguously declares:

إِنَّ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ لَآيَاتٍ لِأُولِي الْأَبْصَارِ
الَّذِينَ يَذْكُرُونَ اللَّهَ قِيَامًا وَقُعُودًا وَعَلَىٰ جُنُوبِهِمْ وَيَتَفَكَّرُونَ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ رَبَّنَا
مَا خَلَقْتَهُذَا بَاطِلًا سُبْحَانَكَ قَعْنَا عَذَابَ النَّارِ

Surely in the creation of the heavens and earth and in the alternation of night and day there are signs for men possessed of minds who remember God, standing and sitting and on their sides, and reflect upon the creation of the heavens and the earth, "Our Lord, You have not

created this for vanity. Glory be to You! Guard us against the chastisement of the Fire.” (3:190 -191)

If the line of demarcation between religion and science is made clear, there is no reason for any conflict between these two. In fact, they would complement each other. Science is like the lamp of life and religion its guide.

Proposals

We have seen how Islam has strongly emphasized the need for acquisition of knowledge in its widest sense, and how the Muslims, following the teachings of Islam, created a brilliant civilization and were the leaders of human intellectual advancement for centuries. We also saw how the separation of religion from science in Muslim societies caused the Muslims to abandon their role of intellectual leadership of humankind.

But how the Muslim community is showing gradual reawakening, and a new spirit is resurging in almost every corner of the Muslim world, the time seems most suitable for taking decisive steps towards bringing about a scientific renaissance. In this context, we call the attention of our readers to the following proposals:

1. Like the scholars and scientists of the early centuries of the Islamic era we should learn all useful sciences from others. We can liberate scientific knowledge from its attending Western materialistic interpretations and rehabilitate it in the context of Islamic world outlook and ideology.

2. The kind of alliance which existed between religious and natural sciences during the peak days of Islamic civilization should be re-established since, as has been pointed out, there is no conflict between the ends of religion and science. Religion teaches all creation is oriented towards God as stated in the Qur’anic verse:

يُسَبِّحُ لِلَّهِ مَا فِي السَّمَاوَاتِ وَمَا فِي الْأَرْضِ الْمَلِكِ الْقُدُّوسِ الْعَزِيزِ الْحَكِيمِ

All which is in the heavens and the earth magnifies God, the Supreme, the All-holy, the Almighty, the All-wise. (62:1)

Science, too, is engaged in an attempt to unravel a comprehensive unity in the laws of nature. The present day physicists are involved in an effort of reducing all apparently independent forces of nature of a single fundamental one and have obtained some success in this field.³⁷

For the achievement of this goal, it seems inevitable the latest scientific principles should be taught in theological centres, and, in the same way, religious sciences should be taught in universities at a comparatively advanced level. This will be instrumental in familiarizing Muslim research scholars with the Islamic world outlook. Moreover, it would give the opportunity to theological schools to utilize latest scientific finds for clarification of the content of the law of the Shari’ah.

3. For the achievement of an all-round independence of the Islamic Ummah, it is essential all the Muslim countries take steps towards the training of specialists in all important scientific and industrial fields. Moreover, research centres should be established by all Muslim communities so Muslim researchers can work without any anxieties or problems, and with all necessary facilities for research, so they are not

forced to take refuge in atheistic environments, and as a result compelled to put their expertise in the service of others.

4. Scientific research should be thought of as a fundamentally essential and not an ancillary pursuit. The Muslims should think of it as an obligation imposed upon them by the Qur'an so they do not come to rely and be dependent on others.

Presently, the practice in most Muslim countries is to import all machinery along with a little knowledge of assembling its parts from Eastern and Western countries instead of making a serious attempt in fundamental scientific research. The present trend will never lead Muslim countries to scientific and technological self-sufficiency. Imported technology should be accompanied by indigenous research work.

5. There should be co-operation between Muslim countries in the scientific and technological research. For this purpose, establishment of communication links between their universities can serve as a preliminary ground. Moreover, joint research and development bodies (such as the Geneva based CERN organization) should be formed by the Muslim countries where Muslim scientists and research scholars can work together. There should be no nationalistic bias in this regard. Such centres were widely prevalent during the past ages of Islamic civilization.

All which has been done hitherto in this connection is more or less of a rudimentary nature. Now it is time for a decisive stem in this direction.

Notes

1. Kulayni, al-Kafi, vol. 1, p. 30; ibn majah, Sunan, Introduction, see 17, no. 224.
2. Abu Hamid al-Ghazali, Ihya 'Ulum al-Din, vol. 1, p. 14.
3. Ibid, vol. 1, p. 15.
4. Ibid, vol. 1, p. 16.
5. Ibid, vol. 1, p. 39.
6. Ibid, vol. 1, p. 22.
7. Mulla Muhsin Fayd Kashani, Muhajjat al-Bayda vol. 1, p. 59.
8. Ibid, vol. 1, p. 71.
9. Ibid, vol. 1, p. 72.
10. Sadr al-Din Shirazi, Sharh Usul al-Kafi, p. 121.
11. Ibid, p. 120.
12. Ibid, p. 121.
13. Ibid, p. 129.
14. Murtada Mutahhari, Guftar e-Mah, vol. 1, p. 137.
15. Zayn al-Din 'Amili, Munyah al-Muried (Qum, 1402 H), ibn Majah Sunan, Introduction, see 17, No. 223).
16. Suyuti, al-Jami al-Saghir, vol. 1, p. 11.
17. Saduq, Amali (Beirut, 1400 H), p. 27.
18. Zayn al-Din al-'Amili, Munyah al-Murid, p. 71; Suyuti, al-Jami al-Saghir, vol. 2, p. 255.
19. 'Allamah Mohammad Baqir Majlisi, Bihar al-Anwar, vol. 2, p. 97.
20. 'Amidi, Ghurar al-Hikam wa Durar al-Kalim (Tehran University Press), vol. 2, p. 394.
21. Saduq, Ghurar al-Hikam wa Durar al-Kalim (Tehran University Press), vol. 2, p. 394.
22. Suyuti, al-Jami al-Saghir, vol. 1, p. 196.
23. Nahj al-Balaghah (S. al-Saleh Ed.) p. 393.
24. 'Amidi, Ghurar al-Hakim wa Durar al-Kalim, vol. 2, p. 56.

25. Although, even in this case, it may be said the religious information of most of Muslims is vary scanty, and unfortunately, most of the laws of Islam have, in practice, lost their social relevance.
26. Kulayni, al-Kafi, vol. 1, p. 27; Harrani, Tuhaf al-'Uqul (Qum, 1394, A.H.) p. 264.
27. Fattal Nayshaburi Rawday al-Wa'izin, vol. 1, p. 12.
28. M. Baqir Majlisi, Bihar al-Anwar, vol. 1, p. 184.
29. Zayn al-Din 'Amili, Munyah al-Murid, p. 24.
30. Ibn Abi Jumah, Ghwali al-La'ali, vol. 1, p. 101; see also Suyuti's alJami al-Saghir, vol. 1, p. 558.
31. Zayn al-Din Amili, Munyah al-Murid, p. 43; see also ibn Majah, Sunan, Introduction, sec. 23, no. 258.
32. M. Baqir Majlisi, Bihar al-Anwar, vol. 2, 37; see also al-Jami al-Sayhir, vol. 2, p. 487.
33. Kulayni, al-Kafi, vol. 1, p. 41.
34. Sayyid Qutb, Fi Zilal al-Qur'an, vol. 6, pp. 262 - 263.
35. A. Noofel al-Muslimun wa al-'Ilm al-Hadith, p. 5.
36. M. Shaltut, Tafsir al-Qur'an al-Karim (Dar al-Shuruq) pp. 11 - 14).
37. Ideals and Realities, Selected Essays of Abdus Salam, Scientific Publishing Co., 1984, pp. 299 - 303, P.C.W. Davies, The Forces of Nature, Cambridge University Press, pp. 216 - 227.

Part 2: The Significance of Physical and Biological Sciences in Islamic Perspective

Introduction

In the Holy Qur'an the word al-'ilm, knowledge, and its derivatives are used more than **780** times. The first few verses which were revealed to our Prophet (S) mention the importance of reading, pen, and teaching for human beings:

اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ اقْرَأْ وَرَبُّكَ الْأَكْرَمُ الَّذِي عَلَّمَ بِالْقَلَمِ عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ

“Read, in the name of your Lord who created. He created man from something which clings. Read and your Lord is the most generous. Who taught with the pen. Taught man what he knew not...” (96:1 - 5)

And about the creation of Adam, the Qur'an says even the angels bowed before Adam after he was taught the names:

وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى الْمَلَائِكَةِ فَقَالَ أَنْبِئُونِي بِأَسْمَاءِ هَؤُلَاءِ إِنْ كُنْتُمْ صَادِقِينَ قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

“And He taught Adam the names, all of them, then He presented them unto the angels and said, ‘Now tell Me the names of these if you speak truly.’ They said, ‘Glory be to Thee, We know not save what Thou hast taught us. Surely Thou are the All-knowing, the All-wise.’” (2:31 - 32)

The Qur'an says those who know are not comparable to those who do not know:

قُلْ هَلْ يَسْتَوِي الَّذِينَ يَعْلَمُونَ وَالَّذِينَ لَا يَعْلَمُونَ

Say, “Are those who know and those who do not know alike?” (39:9)

And only the learned understand:

وَتِلْكَ الْأَمْثَالُ نَضْرِبُهَا لِلنَّاسِ وَمَا يَعْقِلُهَا إِلَّا الْعَالِمُونَ

And these examples We set forth for the people, but none understands them save those who know. (29:43)

And only those who have knowledge stand in awe of God:

إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاءُ

Of all His servants, only those endowed with knowledge stand in awe of God.”(35:28)

In the Islamic tradition, too, there are many words of praise for knowledge and the learned. A number of traditions are attributed to the Prophet (S) in this regard, some of which are quoted below:

طلب العلم فريضة على كل مسلم

“It is an obligation for every Muslim to seek knowledge.”¹

اطلبوا العلم ولو بالصين

“Seek knowledge even if it be in China.”²

اطلبوا العلم من المهد إلى اللحد

“Seek knowledge from cradle to grave.”³

العلماء ورثة الأنبياء

Scholars are the heirs of the prophets.”⁴

بوزن يوم القيامة مداد العلماء ودم الشهداء

“The ink of the learned will be weighted with the blood of the martyrs on Resurrection day, and, then, the ink of the learned would be preferred to the blood of martyrs.”⁵

It has been a subject of fundamental importance from the early days of Islam as to which kind of knowledge Islam recommends; is there any specific kind of knowledge to be sought? Some well-known Muslim scholars have counted as praise-worthy only those branches of knowledge which are directly connected with religion. As for other types of knowledge they hold the view it is up to the community to decide which of them are essential for the sustenance and welfare of the community.

We believe there can be no restriction on the acquisition of knowledge, and, if there were any limitations of this kind, our Holy Prophet (S) would have mentioned them. Furthermore, on the basis of the Qur’an and Islamic traditions, one can hold the recommended type of knowledge itself embraces a wide range of subjects.

According to a tradition, Imam Ja‘far al-Sadiq, while addressing himself to Mufaddal ibn ‘Umar clearly described the vast domain of Islamic Science:

ذكرنا مفضل ، فيما أعطى الإنساء علمه وما مُنع ، فإنه أعطي علم جميع ما فيه صلاح دينه ودُنياه ، فمما فيه صلاح دينه معرفة الخالق تبارك وتعالى بالدلائل والشواهد القائمة في الخلق ، ومعرفة الواجب عليه من العدل على الناس كافة ، وبر الوالدين وأداء الأمانة. ومواساة أهل الخلة ، وأشباه ذلك مما قد تُوجد معرفته والإقرار والإعتراف به في الطبع والفترة ، من كل أمة مُوافقة أو مخالفة ، وكذلك أعطي علم ما فيه صلاح دنياه كالزراعة والغراس ، واستخراج الأرضين واقتناء الأغنام والأنعام واستنباط المياه ومعرفة العقاقير التي يُستشفى بها من ضروب الأسقام والمعادن التي يُستخرج منها أنواع الجواهر ، وركوب السفن والغوص في البحر ، وضروب الجبل في صيد الوحش والطيور والحيتان ، والتصرف في الصناعات ، ووجوه المناجر والمكاسب ، وغير ذلك مما يطول سرحه وبكتر تعداده ، مما فيه صلاح أمره في هذه الدار. فأعطي علم ما يصلح به جينه ودنياه ، ومنع ما سوى ذلك مما ليس في شأنه ولا طاقه أن يعلم ، كعلم الغيب وما هو كائن وبعض ما قد كان...فانظر كيف أعطي الإنسان علم جميع ما يحتاج إليه لدينه ودنياه ، وحُجب عنه ما سوى ذلك. ليعرف قدره ونقصه. وكلا الأمرين فيهما صلاحه

“Oh Mofaddal, remember what God has granted man to learn, and what He has forbidden him from knowing. Man may acquire the knowledge of

what is good for life in this world and his faith. In the sphere of religious interests of man are: knowledge of God Almighty, through signs and strong proofs which are manifest in creation, obligatory knowledge of issues which lead to just treatment of fellowmen, to parents, trustworthiness, helping the poor, and the awareness of the values and principles in which every human being, whether believing in God or disbelieving Him, intrinsically and naturally cherishes.

Man has also been granted capacity of knowing what is good for his worldly interests, such knowledge includes the following: agriculture, plantation, cultivation of land, animal husbandry, utilization of pharmaceutically useful plants, exploitation of mineral resources, navigation and diving the seas, methods and weapons of hunting (animals and birds) and fishing, management of various industries, a variety of trades and professions, and many other disciplines profitable to man in this world.

Therefore, God has made man capable of attaining all knowledge which he needs for the benefit of this worldly life and He has forbidden what is unfit and beyond his reach such as: occultation, prevision, knowledge of certain past events...So, look and reflect on how God granted man some capabilities to get what he needs for this world and his religion, while He has deprived him of other abilities so he may appreciate what he has, and be aware of what he lacks - both of which are to his benefit.”⁶

The only limit set to the acquisition of knowledge in Islam is Muslims should seek useful knowledge. Our great Prophet (S) is reported as having said:

“My Lord, save me from useless knowledge.”⁷

Any knowledge helping a human in performing his God-assigned role in this world is useful, other than what is considered useless knowledge. The following statement which has been reported from Imam al-Sadiq, may be used as a criterion to distinguish between useful and useless sorts of knowledge:

فكل ما يتعلم العباد أو يعلمون غيرهم من صنوف الصناعات مثل الكتابة والحاسب والتجارة والصياغة والسراجة والبناء والحكاية والقصارة والخياطة وصنعة صنوف التصاوير - ما لم يكن مثل الروحاني - وأنواع صنوف الآلات التي يحتاج إليها العباد التي منها منافعهم وبعيل قوامهم وفيها بلغة جميع حوائجهم فحلال فعله وتعليمه والعمل به وفيه لنفسه أو لغيره وإن كانت تلك الصناعة وتلك الآلة قد يستعان بها على وجوه الفساد ووجوه المعاصي ويكون معونة على الحق والباطل. فلا بأس بصناعته وتعليمه ، نظير الكتابة التي هي على وجه من وجوه الفساد من تقوية ولاية ولاية الجور. وكذلك السكين والرمح والقوس وغير ذلك من وجوه الأئمة التي قد تصير لاف إلى جهات الصلاح وجهات الفساد وتكون آلة ومعونة عليهما ، فلا بأس بتعليمه وتعلمه وأخذ الأجر عليه وفيه والعمل به وفيه لمن كان له فيه جهات الصلاح من جميع الخلائق ومحرم عليهم فيه تصريفه إلى جهات الفساد والمضار ،

فليس على العالم والمتعلم اثم ولا وزر لما فيه من الرجحان في منافع جهات صلاحهم وقوامهم وبقائهم به وانما الإثم والوزر على المنصرف بها في وجوه الفاسد والحرام ، وذلك انما حرم الله الفساد التي حرام هي كلها التي ينجي منها الفساد محضاً نظير البرابط والمزامير والشطرنج وكل ملهوبة والصلبان والأقسام وما أشبه ذلك من صناعات الأشربة الحرام وما يكون منه وفيه الفساد محضاً ولا يكون فيه ولا منه شيء من وجوه الصلاح فحرام تعليمه والعمل به واخذ الأجر عليه وجميع التقلب فيه من جميع وجوه الحركة كلها. الا ان تكون صناعة قد تتصرف إلى جهات الصنائع ، وان كان قد ينصرف بها ويتناول بها وجه من وجوه المعاصي ، فلعله لما فيه من الصلاح حل تعلمه والعمل به ، ويحرم على من صرفه إلى غير وجه الحق والصلاح

“Any sort of science and technology which eliminates person’s needs or is useful to God’s servants and helps them to continue their lives and meet their daily needs, is permitted by religion to teach or learn. For example, they are: writing, accounting, commerce, work of a goldsmith, saddle making, brick laying, knitting, tailoring, painting and drawing (with the exception of animate beings) and making tools required by people. But if such knowledge or skill could be used for vicious and sinful purposes as well as rightful and noble deeds, such as writing, which may be abused for strengthening oppressive rulers, is not forbidden; so make knives, swords, spears, bows and arrows which can be used in both good and ways.

Teaching and learning such trades or receiving fees for their instruction, provided it is for the benefit of God’s servants, is permissible, but their use in harmful or vicious ways is forbidden; in either case, it is not a sin for person to teach or learn such a trade for utility of these tools is greater than the harm caused by their abuse and the continuity of social life depends on them. Their misuse, however, is a sinful deed. This is because God has forbidden going after anything which is totally corrupt and has no useful result.

Thus, it is forbidden to make strings (of musical instruments) flutes, chess, various instruments of entertainment and pleasure, crosses, idols or the like, and intoxicating drinks, and anything causing disturbance in harm, or ending in corruption and having no use for man, is forbidden to teach, to learn or impart it to others and to obtain fees or wages for them. If there is a craft or industry which is used for other industries or crafts, even if it is sometimes used for sinful purposes, it would be permissible to be developed, but using it in the wrong way would unlawful.”⁸

Islam and Science

In this section, firstly we intend to deal with the reason which justifies study of the sciences (of nature) from the Islamic view point and then we shall try to see how far the Islamic conception of knowledge is compatible with sciences of nature. The study of the Qur’an and the Islamic tradition indicates for two fundamental reasons Islam recognizes the significance of science:

1. The role of science in knowing God.

2. The role of science in the stability and advancement of Islamic society.

1. The Role of Science in Knowing God

In the Holy Qur'an there are more than **750** verses which refer to natural phenomena, and people are asked to think over them in order to recognize Allah through His signs. These verses can be divided into the following categories:

1. The verses which either describe the constituent elements of objects or enjoin people to discover them. For example, we read in the Qur'an:

فَلْيَنْظُرِ الْإِنْسَانُ مِمَّ خُلِقَ

“So let man consider of what he is created.” (86:5)

مَاءٍ مِنْ دَابَّةٍ كُلَّ خَلْقٍ وَاللَّهُ

“And Allah has created every living creature from water.” (24:45)

صَبْرًا سَمِيْعًا فَجَعَلْنَاهُ نَبْئَلِيْهِ اَمْشَاجٍ نُّطْفَةٍ مِنَ الْاِنْسَانِ خَلَقْنَا اِنَّا

“We created man from a sperm drop, a mingling, trying him, and we made him hearing, seeing.” (72:2)

2. The verses either give an account of the manner of creation of material objects or enjoins a person to discover their genesis. The following are typical of this category:

وَهُوَ الَّذِي خَلَقَ السَّمَاوَاتِ وَالْاَرْضَ فِي سِتَّةِ اَيَّامٍ وَكَانَ عَرْشُهُ عَلَى الْمَاءِ

“And it is He who created the heavens and the earth in six periods, and His Dominion was upon the waters...” (11:7)

وَلَقَدْ خَلَقْنَا الْاِنْسَانَ مِنْ سَلَالَةٍ مِنْ طِينٍ ثُمَّ جَعَلْنَاهُ نُطْفَةً فِي قَرَارٍ مَكِيْنٍ ثُمَّ خَلَقْنَا النُّطْفَةَ عَلَقَةً فَخَلَقْنَا الْعَلَقَةَ مُضْغَةً فَخَلَقْنَا الْمُضْغَةَ عِظَامًا فَكَسَوْنَا الْعِظَامَ لَحْمًا ثُمَّ اَنْشَأْنَاهُ خَلْقًا اٰخَرَ ۗ فَتَبَارَكَ اللهُ اَحْسَنُ الْخَالِقِيْنَ

“And certainly we created man of an extract of clay, and then We made him a small life- germ in a firm resting place. Then We made the life germ a clot, then We made the clot a tissue, then We made the tissue bones, then We clothed the bones with flesh, then We caused it to grow into another creation, so blessed be Allah, the best of Creators.” (23:12 - 14)

يُؤْمِنُوْنَ اَفَلَا هِيَ حَيِّ شَيْءٍ كُلِّ الْمَاءِ مِنْ وَجَعَلْنَاهُ فَفَتَقْنَاهُمَا رَتْقًا كَانَتَا وَالْاَرْضَ السَّمَاوَاتِ اَنَّ كَفَرُوْا الَّذِيْنَ يَرُوْنَ اَوْ اَمَّ

“Do not those who disbelieve see the heavens and the earth were closed up which we then parted asunder...” (21:30)

بِكُمْ تَمِيْدَ اَنَّ رَوَاسِي الْاَرْضِ فِي وَالْقُلُوبِ رَتْقًا عَمَدٍ بَعِيْر السَّمَاوَاتِ خَلَقَ

“He created the heavens without pillars you can see, and he cast on the earth firm mountains, lest it shakes with you...” (31:10).

طَائِعِيْنَ اَنْتَيْنَا قَالَتَا كَرْهًا اَوْ طَوْعًا اْتَيْنَا وَلِلْاَرْضِ لَهَا فِقَالٌ دُخَانٌ وَهِيَ السَّمَاءُ اِلَى اسْتَوَى ثُمَّ

“Then He directed himself to the heaven when it was a vapour.” (41:11).

أَفَلَا يَنْظُرُونَ إِلَى الْإِبِلِ كَيْفَ خُلِقَتْ إِلَى السَّمَاءِ كَيْفَ رُفِعَتْ إِلَى الْجِبَالِ كَيْفَ نُصِبَتْ إِلَى
الْأَرْضِ كَيْفَ سُطِحَتْ

“Will they not then consider how the camel was created, how heaven was lifted up, how the mountains were hoisted, how the earth was outstretched.” (88:17 - 20).

3. The verses in which man is enjoined to discover our physical universe came into existence. The following are typical of this kind of verses:

قُلْ سِيرُوا فِي الْأَرْضِ فَانظُرُوا كَيْفَ بَدَأَ الْخَلْقَ

Say, “Journey in the Earth, then behold how He originated creation.” (29:20)

أَوَلَمْ يَرَوْا كَيْفَ يُبْدِئُ اللَّهُ الْخَلْقَ ثُمَّ يُعِيدُهُ

Have they not seen how God originates creation, then brings it back again.” (29:19)

4. The verses in which man is enjoined to study natural phenomena. The following verses typify this category:

أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنَابِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ زَرْعًا مُخْتَلِفًا أَلْوَانُهُ
ثُمَّ يَهْبِجُ فَتَرَاهُ مُضْغًا ثُمَّ يَجْعَلُهُ حُطَامًا إِنَّ فِي ذَلِكَ لَذِكْرًا لِأُولِي الْأَلْبَابِ

“Do you not see Allah sends down water from the heaven (cloud), then makes it go along in the Earth in springs, then brings forth there with herbage of various colours, then it withers so you see it becoming yellow, then He makes it a thing crushed and broken into pieces? Most surely there is a reminder for the men of understanding. (39:21)

وَيَجْعَلُهُ يَشَاءُ كَيْفَ السَّمَاءِ فِي فَيْبَسْطُهُ سَحَابًا فَتَنفِي الرِّيحِ يُرْسِلُ الَّذِي اللَّهُ

عِبَادِهِ مِنْ يَشَاءُ مَنْ بِهِ أَصَابَ فَإِذَا خَالَاهُ مِنْ يُخْرِجُ الْوَدْقَ فَتَرَى كِسْفًا

يَسْتَبْشِرُونَ هُمْ إِذَا

“Allah is He who sends forth the winds which stir up clouds, and He spreads them in heaven as He pleases, and shatters them, then you see the rain issuing out of the midst of them...” (30:48)

تَجْرِي الْبَحْرِ وَالْقُلُوبِ وَالنَّهَارِ اللَّيْلِ وَاحْتِلَافِ الْأَرْضِ وَالسَّمَاوَاتِ خَلْقٍ فِي إِنَّ الْأَرْضَ بِهِ
فَأَحْيَا مِنْ السَّمَاءِ مِنَ اللَّهِ أَنْزَلَ وَمَا النَّاسُ يَنْفَعُ بِمَا الْبَحْرِ فِي بَيْنِ الْمُسْحَرِ وَالسَّحَابِ
الرِّيحِ وَتَصْرِيفِ دَابَّةٍ كُلِّ مِنْ فِيهَا وَبَثَّ مَوْتَهَا بَعْدَ يَعْمَلُونَ لِقَوْمٍ لآيَاتِ وَالْأَرْضِ السَّمَاءِ

“Surely, in the creation of the heavens and the earth and the alternation of night and day and the ship which runs in the sea with profit to men, and the water God descends down from heaven therewith reviving the earth after it is dead and his scattering abroad in it all manner of crawling things and the turning about of the winds and the clouds compelled between heaven and earth, there are signs for a people having understanding.” (2:164)

4. The verses in which God swears by various natural objects. Here we cite some examples:

وَالشَّمْسِ وَضُحَاهَا وَالْقَمَرِ إِذَا تَلَاها وَالنَّهَارِ إِذَا جَلَّاهَا وَاللَّيْلِ إِذَا يَغْشَاهَا وَالسَّمَاءِ وَمَا بَنَاهَا وَالْأَرْضِ وَمَا طَحَاهَا

“By the sun and his morning brightness, and by the moon when she follows him, and by the day when it displays him and by night when it enshrouds him and by the heaven and which built it and by the earth and which extended it.” (91:1 - 6)

فَلَا أَفْسِمُ بِمَوَاقِعِ النُّجُومِ وَإِنَّهُ لَفَسَّمٌ لَوْ تَعْلَمُونَ عَظِيمٌ

“But nay, I swear by the fallings of stars. And most surely it is a very great oath if you only know.” (56:75 - 76)

وَالسَّمَاءِ وَالطَّارِقِ وَمَا أَدْرَاكَ مَا الطَّارِقُ النَّجْمُ الثَّاقِبُ

“By heaven and the night star. And what shall teach you what is the night star, the piercing star.” (86:1 - 3)

6. The verses in which with reference to some natural phenomena the possibility of the occurrence of Resurrection has been explained. Examples:

يَا أَيُّهَا النَّاسُ إِنْ كُنْتُمْ فِي رَيْبٍ مِنَ الْبَعْثِ فَإِنَّا خَلَقْنَاكُمْ مِنْ تُرَابٍ ثُمَّ مِنْ نُطْفَةٍ ثُمَّ مِنْ عَلَقَةٍ ثُمَّ مِنْ مُضْغَةٍ مُخَلَّقَةٍ وَغَيْرِ مُخَلَّقَةٍ وَنُقِرُّ فِي الْأَرْحَامِ مَا نَشَاءُ إِلَى أَجَلٍ مُسَمًّى ثُمَّ نُخْرِجُكُمْ طِفْلاً ثُمَّ لِتَبْلُغُوا أَشُدَّكُمْ وَمِنْكُمْ مَنْ يُتَوَفَّى وَمِنْكُمْ مَنْ يُرَدُّ إِلَى أَرْذَلِ الْعُمُرِ لِكَيْلَا يَعْلَمَ مِنْ بَعْدِ عِلْمٍ شَيْئًا وَتَرَى الْأَرْضَ هَامِدَةً فَإِذَا أَنْزَلْنَا عَلَيْهَا الْمَاءَ اهْتَزَّتْ وَرَبَتْ وَأَنْبَتَتْ مِنْ كُلِّ زَوْجٍ بَهِيجٍ

“Oh people, if you are in doubt about the raising, then surely we created you from dust, then from a small life-germ, then from a clot, then from a lump of flesh, complete in make and incomplete...and you see the earth’s sterile land, but when We send down on it the water, it stirs and swells and brings forth of every kind a beautiful herbage.” (22:5)

بَلَىٰ ؕ مِثْلَهُمْ يَخْلُقُ أَنْ عَلَبِقَادِرٍ وَالْأَرْضِ السَّمَاوَاتِ خَلَقَ الَّذِي أَوْلَيْسَ الْعَلِيمُ الْخَلَّاقُ وَهُوَ

“Is not He who created the heavens and the earth able to create the like of them? Yes! And He is the Creator (of all), the Knower.” (36:81)

مَوْهًا بَعْدَ الْأَرْضِ وَيُحْيِي الْحَيِّ مِنَ الْمَيِّتِ وَيُخْرِجُ الْمَيِّتَ مِنَ الْحَيِّ يُخْرِجُ تُخْرَجُونَ وَكَذَلِكَ ؕ

“He brings forth the living from the dead and brings forth the dead from the living and gives life to the earth after its death and thus shall you be brought forth.” (30:19)

7. The verses which emphasize the thoroughness and orderliness of the creations of Allah. The following verses envisage this point:

وَتَرَى الْجِبَالَ تَحْسَبُهَا جَامِدَةً وَهِيَ تَمُرُّ مَرَّ السَّحَابِ ؕ صُنِعَ اللَّهُ الَّذِي أَنْتُمْ كُلٌّ شَيْءٌ

“And you shall see the mountains which you supposed fixed passing by like clouds; God’s handiwork, who has created everything very well...” (27:88)

الَّذِي خَلَقَ سَبْعَ سَمَاوَاتٍ طِبَاقًا ۗ مَا تَرَىٰ فِي خَلْقِ الرَّحْمَنِ مِن تَفَوتٍ ۗ فَارْجِعِ الْبَصَرَ هَل تَرَىٰ مِن فُطُورٍ ۗ ثُمَّ ارْجِعِ الْبَصَرَ كَرَّتَيْنِ يَنقَلِبْ إِلَيْكَ الْبَصَرُ حَاسِدًا ۗ وَهُوَ حَسِيرٌ

“Who created seven heavens one upon another. You see no imperfection in the creation of the Beneficent God; then look again, can you see any disorder? Then returns back the eye again and again, your look shall come back to you dazzled, a weary.” (67:3 - 4)

شَيْءٍ كُلِّ مِن فِيهَا وَأُنْبِتْنَا رَوَاسِيَ فِيهَا وَالْفَيْنَا مَدَدْنَاهَا وَالْأَرْضَ مَوْزُونٍ

“And the earth, we stretched it forth and cast on it firm mountains, and We caused to grow in it of everything justly weighted.” (15:19)

وَخَلَقَ كُلَّ شَيْءٍ فَقَدَرَهُ تَقْدِيرًا

“And He created everything, then He ordained it very carefully.” (25:2)

خَلَقَ السَّمَاوَاتِ وَالْأَرْضَ بِالْحَقِّ ۗ يُكَوِّرُ اللَّيْلَ عَلَى النَّهَارِ وَيُكَوِّرُ النَّهَارَ عَلَى اللَّيْلِ ۗ وَسَخَّرَ الشَّمْسَ وَالْقَمَرَ ۗ كُلٌّ يَجْرِي لِأَجَلٍ مُّسَمًّى

“He created the heavens and the earth in truth, wrapping night about the day, and wrapping day about the night, and He has subjected the sun and the moon, each of them running to an assigned term.” (39:5)

وَمَا خَلَقْنَا السَّمَاءَ وَالْأَرْضَ وَمَا بَيْنَهُمَا لَاعِبِينَ

“And we did not create the heaven and the earth and what is between them for sport.” (21:16)

8. The verses which explain the harmony in which man exists with the rest of the physical universe and the subservience of what is in the earth and in the heavens to man. The following exemplify this type of verses:

جَمِيعًا الْأَرْضِ فِي مَا لَكُمْ خَلَقَ الَّذِي هُوَ

“It is He who created for you all that is on the earth.” (2:29)

...مِنْهُ جَمِيعًا الْأَرْضِ فِي وَمَا السَّمَاوَاتِ فِي مَا لَكُمْ وَسَخَّرَ

“And He has made subservient to you what is in the heavens and what is in the earth, all together form him...” (45:13)

...رِزْقِهِ مِنْ وَكُلُوا مَنَاقِبَهَا فِي فَاْمَشُوا دُلُولا الْأَرْضَ لَكُمْ جَعَلَ الَّذِي هُوَ

“It is He Who made the earth submissive to you; therefore, walk in its tracts, and eat of His provisions...” (67:15)

وَأَنْزَلْنَا الْحَدِيدَ فِيهِ بَأْسٌ شَدِيدٌ وَمَنَافِعٌ لِلنَّاسِ

“And we sent down iron, wherein is great might, and many uses for men...” (57:25)

وَهُوَ الَّذِي جَعَلَ لَكُمْ النُّجُومَ لِتَهْتَدُوا بِهَا فِي ظُلُمَاتِ الْبَرِّ وَالْبَحْرِ ۗ قَدْ فَصَّلْنَا الْآيَاتِ لِقَوْمٍ

يَعْلَمُونَ

“And He is who has made the stars for you which you might follow the right way thereby by the darkness of the land and sea; truly We have made plain the communications for a people who know.” (6:97)

In these verses the Almighty invites His servants to see and reflect upon the natural phenomena, and through the observation of order and coordination in the system of creation and its wonders get closer to Him. It is obvious in having a clear conception of the issues referred to in these verses, and for the discovery of the answers to the problems therein one has to be familiar with the natural and physical sciences because a superficial knowledge of natural phenomena cannot reveal the grandeur of Creation to man. It is for this very reason in the verse 28 of the chapter Fatir, after describing a number of natural phenomena, God says:

إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاءُ

“...of His servants only those who are possessed of knowledge fear Allah...” (35:28)

Also:

بَلْ هُوَ آيَاتٌ بَيِّنَاتٌ فِي صُدُورِ الَّذِينَ أُوتُوا الْعِلْمَ

“Nay, these are clear signs in the breasts of those who have been given knowledge...” (29:49)

On the other hand, the knowledge of natural phenomena is effective in leading us closer to God only if we have faith. The following verse asserts this point beautifully:

قُلْ انظُرُوا مَاذَا فِي السَّمَاوَاتِ وَالْأَرْضِ ۚ وَمَا تُعْطِي الْآيَاتِ وَالنُّذُرِ عَنْ قَوْمٍ لَا يُؤْمِنُونَ

Say, “Behold what is in the heavens and in the earth, but neither signs nor warnings avail a people who do not believe.” (10:101)

One should not forget, however, the Qur’an is not a handbook of experimental science and if it explains some natural phenomena, it is because of the following reasons:

1. The study of natural phenomena and wonders of creation strengthens man’s faith in God.
2. By becoming familiar with the opportunities which God has provided for man, he becomes more knowledgeable about Allah and by obtaining just benefits from them, he can offer his gratitude to God.

In fact, it was due to the encouragement of the Qur’an for the study of natural phenomena in which Muslim scientists became deeply involved in this field. The development of Islamic civilization, too, was to a great extent, indebted to the Qur’an outlook. The prominent Muslim scientists of the past have acknowledged their indebtedness to the Qur’an, and even some Western scholars have acknowledged it.

For example, Levy, in *The Social Structure of Islam* says, “Apart from a small number of investigators inspired by Greek philosophic ideals, the Muslims who engaged in the pursuit of science did so...in order to discover, in the wonders of nature, the signs or tokens of the glory of God.”⁹

George Sarton, in his book *“Introduction of the History of Science”* writes, in order to fully conceive the motive behind the activities of Muslim

scholars in the fields of science, one should note the axial role of the Qur'an for them.¹⁰

In his book, Kitab al-Tahdid Nihayat al-Amakin, al-Biruni writes, "When a person decides to discriminate between truth and falsehood, he has to study the universe and find out whether it is eternal or created. If somebody thinks he does not need this kind of knowledge, he is, however, in need of thinking about the laws which govern our world, in part or in its entirety. This leads him to know the truth about them, and paves the way for knowing the being, which directs and controls the universe, and His attributes. This is, in fact, the kind of truth which God enjoined His knowledgeable servants to search for, and Allah spoke the truth when He said:

وَيَتَفَكَّرُونَ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَذَا بَاطِلًا

"...And reflect upon the creation of the heavens and the earth; our Lord, You have not created this in vain." (3.191)

This verse contains what I explained in detail, and if man works according to it, he can have access to all branches of knowledge and cognition."¹¹

Also, in al-Biruni's Kitab al-Jamahir we read, "Sight connects what we see to the signs of Divine wisdom in creatures, and from the creation we deduce the existence of the Creator."¹²

In this part of his diary which belongs to the year **417** Hijrat, ibn al-Haytham writes, "From my very childhood I have been wondering about the various peoples (i.e. sects) and their beliefs. Each sect has its own opinions and beliefs according to the principles of its faith. I, therefore, began to doubt the views of various sects, and I am now convinced truth is one and the same and their differences are based on the ways and methods of finding the truth. Having gained an insight into the intellectual basis, I decided to search for the truth and tear away the veil of superstitions and doubts, which an elusive vision has cast on the people, and so the doubting and sceptical people may lift their gaze freed from the labyrinth of scepticism.

"Afterwards, I decided to discover what it is which brings us closer to God, what pleases Him most, and what makes us submissive to his ineluctable Will. My feelings were akin to those of Gallen, which he describes in the seventh chapter of his Hilat ul-Bur. While addressing his students, he avers, 'I am not aware of the feelings, thoughts, and sensations which have guided me since my childhood. Call it what you may - a matter of chance, or intuition vouchsafed by Almighty God, or madness. You may attribute the source of my inspiration to any of the three.

'I shunned the publications, looked at them with contempt and derision and did not incline toward their company. In constantly sought knowledge and truth, and it became my belief for gaining access to the effulgence and closeness of God, there is no better way than a search for truth and knowledge.' (End of quotation from Gallen).

"At last, I was led to the conclusion in Truth can only be discovered by the formulations of theories, the content of which is sense and their form is intellectual equipment. I found such theories present in the logic, physics,

and theology of Aristotle...when I discovered what Aristotle had done, I decided to understand philosophy whole-heartedly. There are three disciplines which make philosophy: mathematics, physical sciences and theology.

“Therefore, I learnt their principles and in this way I acquired skill in their derivatives...Realizing the mortality of man...I explained and surmised whatever knowledge I had acquired in these three disciplines, and wrote some books in the explanation of the difficulties in relation to their derivatives. This has been going on until now, i.e. 417 A.H.”¹³

We see Muslim scientists’ quest for knowledge of natural phenomena was due to the fact they considered this course of study to be one of the best ways of approaching God. They believed by studying signs of God in nature one can discover the inter-relation between all parts of the universe and the unity hidden behind this world of multiplicity, and this in turn leads him to the unique Creator. In the glorious period of Islamic civilization, Muslim scientists assimilated cosmological sciences of their time into their own knowledge because these sciences, too, in their view, were trying to demonstrate the unity of nature and were searching for the primary cause of things, and, thus, were conformable to Islamic perspective.

In this process, however, they first drew out the foreign elements, and then infused the rest with the Islamic concepts. Furthermore, Muslim scientists employed both experimental and theoretical methods of investigation.

Unfortunately, this kind of outlook toward the sciences of nature was gradually discarded in the Islamic world and Muslims neglected the recommendations of the Holy Qur’an about the study of nature and taking advantage of the opportunities which God has provided for man. On the other hand, non-Muslims studied these subjects, and this gave them mastery over the rest of the world. An important consequence of this grave mistake was a large gap appeared between religion and the mundane affairs of Muslims and they were forced to try to learn science and technology from the West.

A by-product of this was the infiltration of undesirable features of Western civilization into the Islamic world. As a consequence of these unfortunate facts, Muslims have reached a point where they have lost their spiritual qualities, and are not capable of controlling their mundane affairs without foreign assistance.

2. The Role of Science in the Stability and Advancement of an Islamic Society

According to the Holy Qur’an, Islam is a universal religion:

قُلْ يَا أَيُّهَا النَّاسُ إِنِّي رَسُولُ اللَّهِ إِلَيْكُمْ جَمِيعًا

Say, “*Oh mankind, surely I am the Messenger of God to you all.*” (7:158)

وَمَا أَرْسَلْنَاكَ إِلَّا كَافَّةً لِّلنَّاسِ بَشِيرًا وَنَذِيرًا

“*And We have not sent you but to all mankind as a bearer of good news and as a warner.*” (34:28)

And the aim of Islam is to establish a monotheistic society in which God's word is the highest.

وَجَعَلَ كَلِمَةَ الَّذِينَ كَفَرُوا السُّفْلَىٰ وَكَلِمَةَ اللَّهِ هِيَ الْعُلْيَا

“And He made the word of the unbelievers the lowest, and God's word is the uppermost.” (9:40)

In order to establish such a society and to keep it immune from the dangers of the unbelievers, the Islamic World has to be completely independent. The following verse envisages this point:

وَلَنْ يَجْعَلَ اللَّهُ لِلْكَافِرِينَ عَلَى الْمُؤْمِنِينَ سَبِيلًا

“And God will not grant the unbelievers any way over the believers.” (4:141)

Moreover, the Holy Prophet is reported to have said, “Islam is superior to (all) others and nothing can surpass it.”¹⁴

Obviously, in order to guarantee the superiority of Islamic policy over others, Muslims should try to make themselves independent and self-sufficient. It is for this reason Muslim jurists have given the verdict in which any deed leading to the supremacy of unbelievers over Muslims is forbidden.¹⁵ Moreover, they have decreed it is a duty of an Islamic society to provide whatever is needed for the sustenance of the society. In the Holy Qur'an itself, Muslims are enjoined to prepare and equip themselves in every respect to face the challenge of the forces of unbelievers:

وَأَعِدُّوا لَهُمْ مَا اسْتَطَعْتُمْ مِنْ قُوَّةٍ وَمِنْ رِبَاطِ الْخَيْلِ تُرْهَبُونَ بِهِ عَدُوَّ اللَّهِ وَعَدُوَّكُمْ

“And prepare against them whatever force and strings of horses you can to terrify thereby the enemy of God and your enemy.” (8:60)

Today, everything revolves around the axis of science and technology. Therefore, in order to be independent and self-reliant, Islamic policy should provide all scientific and technological capabilities which are essential for its self-sufficiency and glory. This involves training of specialists of high calibre in every important field of science and technology, and equipping them with the best technical facilities. Unfortunately, since Muslims have over-looked the need to equip themselves with scientific and technological knowledge and have given the way to others in these fields, they have become more and more dependent for their very necessities of life on non-Muslims. Ibn Ikhwah, a Shafi'i jurist of the seventh century after Hijrah, tells us in the Kitab Ma'alim al-Qurbah fi Ahkam al-Hesbah:

“Learning of medicine is compulsory for the community as a whole, but in our time Muslims do not concern themselves with it, and we have many cities which have only Christian and Jewish physicians, whose testimony about medical matters are not acceptable in problems related to religion. In our time, I do not see many studying medicine, but I do see many who are involved deeply into jurisprudence and ethical and polemical issues and our city is full of jurists who are busy with given their opinion about various happenings. I do not know how it is permitted, religiously speaking, at the time when some compulsory duty of the community is neglected one

gets involved in something which others have chosen to get pre-occupied with it...”¹⁶

If ibn Ikhwah was complaining in the seventh century after Hijra, in which most of the physicians in the Muslim society of his time were Jews or Christians, and Muslims were neglecting this compulsory duty, today, we see Muslims are unable to use their resources and they let others exploit them. As the famous Pakistani poet Iqbal states:

دیروز مسلم از شرف علم سر بلند امروز بشت مسلم و اسلامیان خم است

“The Muslim of yesterday was proud and esteemed for his knowledge, (but) today the believers’ and Muslims’ back is bent (before others). Here on asks, ‘While the Qur’an says unbelievers will in no way have domination over the believers, why are they now ruled by unbelievers?’”

The answer may be found in the fact in which Muslims today are not real believers, and they overlook their Islamic obligations. They neither have the unity nor do they go after knowledge and other provisions recommended by the Holy Qur’an:

وَأَعِدُّوا لَهُمْ مَا اسْتَطَعْتُمْ مِنْ قُوَّةٍ وَمِنْ رِبَاطِ الْخَيْلِ تُرْهِبُونَ بِهِ عَدُوَّ اللَّهِ وَعَدُوَّكُمْ

“And prepare against them what force you can and horses tied at the frontier, to frighten thereby the enemy of Allah and your enemy...” (8:60)

Despite all the categorical orders of the Qur’an, let us see what we have done in the way of preparing ourselves and exulting Islamic Society. While Islam does not allow the dominance of the unbelievers over believers even in a simple matter, like inheritance,¹⁷ why are Muslims so entirely dependent on the products of East or West?

It will not be unrealistic to have a look at the present state of the Islamic world:¹⁸

There are about 50 Islamic countries with 1/5 of the total population of the world, and covering 1/5 of the continents of the Earth. They possess 50 percent of the oil reserves as well as other natural resources of the world. On the other hand, the Islamic nations depend on Eastern or Western countries for their food, technology, science and defence requirements. They consume more food than they can produce. In recent years, food consumption in Islamic countries has risen by two and half percent while the rise in the population of these countries has an average growth of three percent.

The rate of literacy in the industrially advanced countries is 95%, in the Third World countries 55% and in the Islamic countries 34% only (this rate in the case of the United States, Russia, and Japan is 99%, in China 56% and Pakistan 21%.) Among the population aged five to 19, the percentage of students is as follows:

- Industrial advanced countries 75%
- Third world countries 48%
- Islamic countries 40%

Among the population aged 20 - 24, university or college students, the percentage is as follows:

- Industrially advanced countries 33%
- Third World countries 9%
- Islamic countries 4%

According to the report submitted to the Islamic Conference in Islamabad in May 1983, the number of research scholars in Islamic countries was about 45,000, whereas 1.5 million researchers were in Russia and 400,000 in Japan in the same year. In the year 1974, 35,000 research scholars were in Israel, and in Iran only 4,900 scholars were doing research work in the same year.

In the year 1976, 352,000 scientific research papers were written in the world, of which 94.5% (333,000) came from the industrially advanced countries which have only one-quarter of the world population, and the third world countries, with the population of three-fourths of the world population, produced only 19,000 articles, and out of this only 17% (i.e. 3,300) were written in Islamic countries. Comparatively speaking, the Islamic world contributed only nine percent of the whole work and two-thirds of the nine percent belonged to Egypt, Nigeria, Iran, Turkey, Malaysia, and Pakistan.

The number of inventions annually registered in the United States or Russia is 50,000, whereas in the whole Islamic countries this figure falls below 500. As for physicians, there is one doctor for every 600 people in the U.S.A., 300 people in Russia, 3,000 people in Pakistan, and 4,000 people in Iran.

It is obvious, in this deplorable condition Islamic countries will continue their dependence on the West until they fully equip themselves in the way of providing their own food and technology, and even this has to be done in the form of mobilized combat, without which there seems to be little likelihood of the elimination of Western cultural and economic influence over Islamic countries. Imam Khomeini in his book "Tahir al-Wasilah" says, "Should the danger of political and economic domination of the enemy increase to the extent it might bring the Islamic society under its political and economic yoke (causing humiliation and shame to Islam and Muslims and weakening them), it would be incumbent on all Muslims to defend their cause with the means and tools similar to those of the enemy."¹⁹

Here, we find it necessary to mention two important points: a) from the Islamic viewpoint it is faith which guarantees the proper use of knowledge. In the Qur'an, knowledge and faith stand side by side. In the first verse revealed to the Prophet (S) reading has been recommended, but reading stands next to the name of the Creator, which means acquiring knowledge should be in God's name, not in of Satan. Knowledge, together with faith, leads to righteousness, whereas knowledge in the hand of the unbelievers is a means of destruction. Many abuses of knowledge have been made by the unbelieving scientists. A tradition related to our Prophet (S) says:

ألا إن شر الشر شرار العلماء وإن خير الخير خيار العلماء

"Surely, the worst of all evils are wicked scholars and the best of all good things are good scholars."²⁰

As Mowlawi puts it:

يد کهر را علم و قن اموختن دادن تبغ است دست راهزند
تبغ دادن در کف زنکي مست به که باشد علم ناکس را بدست

علم ومال ومنصب وجاه وقران فتنه ارد در كف بد كوهران

بس غزا زين فرض شد برمومنان تا ستانند از كف مجنون ستان

“To impart knowledge and arts to villains, is like giving a sword in the hands of a robber; putting a sword in the hand of a drunk, is a lesser evil than arming a villain with knowledge, wealth, knowledge and position are the cause of corruption in the hands of ignobles; therefore, it is incumbent on the believers to snatch spears from the grip of lunatics.

The Holy Qur’an itself considers religious faith to be an essential factor for attaining all-around superiority.

وَلَا تَهِنُوا وَلَا تَحْزِنُوا وَأَنْتُمْ الْأَعْلَوْنَ إِنْ كُنْتُمْ مُؤْمِنِينَ

“Faint not, neither sorrow, you shall be the upper ones if you are believers.” (3:139)

وَلَوْ أَنَّ أَهْلَ الْقُرَى آمَنُوا وَاتَّقَوْا لَفَتَحْنَا عَلَيْهِم بَرَكَاتٍ مِنَ السَّمَاءِ وَالْأَرْضِ

“Yet had the peoples of the cities believed and been God fearing, He would have showered upon them blessing from heaven and earth.” (7:96)

وَلِلَّهِ الْعِزَّةُ وَلِرَسُولِهِ وَلِلْمُؤْمِنِينَ

“Yet glory belongs unto God, and unto His Messenger and the believers...” (63:8)

It is to be noted, despite the importance given to learning science and technology, they are not considered to be sufficient in themselves, and Muslims should, in addition to raising their standard in the material and scientific fields have firm belief in the Islamic ideology and follow the religious principles for attaining the desired goals. Sayyid Qutb elaborates this matter in a convincing manner:

ولن يجعل الله للكافرين على المؤمنين سبيلا - النساء: 141

“God has made a clear promise and has given a definite order in which if real faith penetrates into the souls of the faithful and is exemplified in their lifestyle and their system of government, and if in all their acts and discourses Muslims pay attention only to Allah..., then Allah will not grant unbelievers any superiority over the believers. In order to guarantee our victory in every place and at all times, we should give priority to our faith and its requirements... and it is faith itself which demands from us strength and self-sufficiency. It forbids us from enemies and not seeking help from anybody but Allah.”²¹

b) Islam encourages Muslims to equip themselves with science and technology, to guarantee the independence and development of the Islamic society, for the sake of the preservation of spiritual aspects. Even in the Qur’an verse:

وَأَعِدُّوا لَهُمْ مَا اسْتَطَعْتُمْ مِنْ قُوَّةٍ وَمِنْ رِبَاطِ الْحَيْلِ

“And prepare against them what force you can and horses tied at the frontier to frighten thereby the enemy of Allah and your enemy.” (8:60)

God invites Muslims to strengthen their defence; it is immediately added in which its aim is weakening (frightening) of the enemies of God and Muslims. Therefore, while strengthening their material powers, Muslims should employ them in the service of spiritual cause and for the realization of Islamic ideals. They should not seek material progress for its own sake. The following glorious verses propound this idea in clear terms:

إِنَّا جَعَلْنَا مَا عَلَى الْأَرْضِ زِينَةً لَهَا لِنَبْلُوهُمْ أَيُّهُمْ أَحْسَنُ عَمَلًا

“Surely, We have made whatever is on the Earth an embellishment for it, so We may try them (as to) which of them is best in works.” (18:7)

وَهُوَ الَّذِي خَلَقَ السَّمَاوَاتِ وَالْأَرْضَ فِي سِتَّةِ أَيَّامٍ وَكَانَ عَرْشُهُ عَلَى الْمَاءِ لِنَبْلُوَكُمْ أَيُّكُمْ

أَحْسَنُ عَمَلًا

“And He is Who created the heavens and the earth in six periods and his dominion (extends) on the waters - which He might manifest you, which of you is best in action.” (11:7)

Conclusion

We can notice in Islam, everything revolves around the axis of the unity of God, and the desirability of science and technology is based on the fact these are tools which add to our knowledge of God and are effective in the establishment of an independent monotheistic society. In our age, when Islamic countries are under the influence of unbelievers, Muslims have a great responsibility on their shoulders. Take into consideration a verse we quoted earlier and re-quote here:

وَأَعِدُّوا لَهُمْ مَا اسْتَطَعْتُمْ مِنْ قُوَّةٍ وَمِنْ رِبَاطِ الْخَيْلِ

“And prepare against them what force you can and horses tied at the frontier to frighten thereby the enemy of Allah and your enemy.” (8:60)

According to this Qur’anic injunction, Muslims should prepare and equip themselves in every respect, and since, today empirical sciences play a fundamental role in every aspect of the material life, strengthening of this dimension of Islamic policy is a necessity. Islamic countries, therefore, should establish centres for promoting scientific and technological research and should train experts of high calibre in all useful fields of science and technology. In this attempt, however, they should put the emphasis on fundamental sciences, so they are able to advance original research rather than imitating others.

On the other hand, in order to ensure the success of scientific renaissance in Islamic policy, several important points should be taken into consideration:

1. It is obvious at the present time, Muslims need to learn science and technology from the countries which are advanced in these fields, and, of course, this is not by itself a blameworthy action. In fact, the Holy Prophet is reported to have said,

اطلبوا العلم ولو بالصين

“Seek knowledge, even if it be in China.”

صالة المؤمن فحيث وجدها فهو احق بها

“The believer is always searching or wisdom, where may find it, it is his, because he deserves to have it more than anyone else.”

خذوا العلم من افواه الرجال

“Acquire knowledge from what people say.”²²

And Imam ‘Ali (peace be upon him) is reported to have said:

حق على العاقل ان يضيف إلى رأيه رأي العقلاء ويضم إلى علمه علوم الحكماء

“It is praiseworthy for ever wise man to add the opinions of other sages to his own, and add the learned’ knowledge to his own knowledge.”²³

العلم ضالة المؤمن ، فخذوه ولو من أيدي المشركين

“Knowledge is the lost property of a believer, thus, acquire it even if it is in the polytheists’ hands.”²⁴

Muslim scholars of the past did the same and what we are supposed to do is to receive knowledge from non-believers in a selective manner, i.e. to purge it from the elements alien to Islam and to remodel it in the light of the Islamic world view. It is under the guidance of these principles in which Muslims can acquire knowledge from non-Muslim sources and mould it to suit the Islamic ideals. It is only under these conditions which different levels of knowledge can be co-ordinated to attain our aim and can take us closer to God.

2. We should revive the scientific spirit of our learned ancestors and their zeal to reshape different branches of knowledge for making use of them for the development of Islamic civilization. They did not see any real contradiction between the so-called religious sciences and the physical sciences, and they considered the aim of both to be the same. In their view, both the biological and physical sciences show the harmony between various parts of the Universe, and therefore, they lead us to God-something which is the aim of religion, too.

It was due to this kind of outlook in which religious, as well as physical sciences, were taught together and some of the Muslim scholars were first-rate authorities in both of them. This praiseworthy tradition has to be revived again, and the curricula of our universities have to include both religious sciences and the latest scientific and technological advances.

It is only in this way Muslims can be equipped with the latest developments made in scientific fields and at the same time, protect their students against atheistic and materialistic teachings of the East and the West, and can bring science and technology under the guidance of Islamic outlook.

3. According to the Holy Qur’an man is the vicegerent of God on Earth:

وَإِذْ قَالَ رَبُّكَ لِلْمَلَائِكَةِ إِنِّي جَاعِلٌ فِي الْأَرْضِ خَلِيفَةً

“And when your Lord said to the angels, ‘I am going to place on the Earth a vicegerent’...” (2:30)

هُوَ الَّذِي جَعَلَكُمْ خَلَائِفَ فِي الْأَرْضِ ۖ فَمَنْ كَفَرَ فَعَلَيْهِ كُفْرُهُ

“It is He Who appointed the vicegerents in the earth, so whoever disbelieves, his unbelief shall be charged against himself.” (35:39)

ثُمَّ جَعَلْنَاكُمْ خَلَائِفَ فِي الْأَرْضِ مِنْ بَعْدِهِمْ لِنَنْظُرَ كَيْفَ تَعْمَلُونَ

Then We appointed you vicegerents on the Earth after them, so We may see how you act.” (10:14)

Now, in order to be able to play this role, God has given man all kinds of gifts and has endowed him with intelligence, and has provided a nice harmony between the creation of man and the rest of the universe so human beings can take care of their needs. Again to quote the Holy Qur’an:

هُوَ الَّذِي خَلَقَ لَكُمْ مَا فِي الْأَرْضِ جَمِيعًا

“He it is Who created for all which is on the Earth.” (2:29)

وَلَقَدْ مَكَّنَّاكُمْ فِي الْأَرْضِ وَجَعَلْنَا لَكُمْ فِيهَا مَعَايِشَ

“And certainly We have established you on the Earth and made in it means of livelihood for you...” (7:10)

It is, therefore, for Muslims to employ their knowledge and technology for the solemn goals of Islam and higher interests of humanity in order to exemplify the glorious verse:

كُنْتُمْ خَيْرَ أُمَّةٍ أُخْرِجَتْ لِلنَّاسِ تَأْمُرُونَ بِالْمَعْرُوفِ وَتَنْهَوْنَ عَنِ الْمُنْكَرِ وَتُؤْمِنُونَ بِاللَّهِ

“You are the best nation ever brought forth to men, bidding to honour, and forbidding dishonour, and believing in God.” (3:110)

Muslims are not permitted to destroy the Earth or spread injustice and corruption upon the Earth. They are asked to dwell in it in a manner desired by God:

هُوَ أَنْشَأَكُمْ مِنَ الْأَرْضِ وَاسْتَعْمَرَكُمْ فِيهَا

“He brought you forth from the Earth and hath made you to dwell in it.” (11:61)

They are supposed to reform it and bring order to it. Unfortunately, Western science, due to its misconceived philosophical notions, has brought destruction in its wake and the knowledgeable and powerful scientists of our time fit the description in the following verse of the Holy Qur’an:

وَإِذَا تَوَلَّى سَعَى فِي الْأَرْضِ لِيُفْسِدَ فِيهَا وَيُهْلِكَ الْحَرْثَ وَالنَّسْلَ ۗ وَاللَّهُ لَا يُحِبُّ الْفُسَادَ

“And whenever he prevails, he hastens about the Earth to do corruption there and to destroy the tillage and the stock, and God does not love corruption.” (2:205)

The story of Adam in the Qur’an, while illustrating the superiority of man, due to his being vicegerent of God and his knowledge of the “names” (asma) warns us of the dangers which face him whenever he violets God’s commandments. man is appointed as the vicegerent of God on Earth in order to reform it, to see the signs of God, and to become representative of His Power and Wisdom.

4. In schools and universities of Islamic countries, sufficient attention should be paid to the problem of moral purification of students and they ought to be instructed in virtuous actions. It is only then the graduates of schools and universities will be both faithful and knowledgeable, and it is

with this kind of scientists in which order can be brought to our world and the well-known saying of Imam Ali exemplified:

والإيمان يعمر العلم

“Knowledge prospers through faith.”²⁵

Knowledge without faith does not produce anything better than what Western civilization has produced, and the faithless scientists have no aim but position, power, and wealth. Imam Khomeini has justly said, “All of these tools which are made for the destruction mankind and all of the advances which are made in the field of weaponry are the products of university graduates who have not been morally trained and who have not purified their souls.”

The Holy Qur’an itself, when talking about the Prophet’s message, mentions spiritual training to be compulsory for learning:

كَمَا أَرْسَلْنَا فِيكُمْ رَسُولًا مِنْكُمْ يَتْلُو عَلَيْكُمْ آيَاتِنَا وَيُزَكِّيكُمْ وَيُعَلِّمُكُمُ الْكِتَابَ وَالْحِكْمَةَ

“As also we have sent among you, of yourselves, a Messenger, to recite Our signs to you and to purify you, and to teach you the Book and the Wisdom.” (2:151).

وَيُعَلِّمُهُمُ الْكِتَابَ وَالْحِكْمَةَ وَيُزَكِّيهِمْ

“...and teach them with the Book and the Wisdom...and purify them.” (2:129)

هُوَ الَّذِي بَعَثَ فِي الْأُمِّيِّينَ رَسُولًا مِنْهُمْ يَتْلُو عَلَيْهِمْ آيَاتِهِ وَيُزَكِّيهِمْ وَيُعَلِّمُهُمُ الْكِتَابَ وَالْحِكْمَةَ

“It is He Who has raised up among the illiterates a Messenger among themselves, to recite His signs to them, and to purify them, and to teach them the Book and the Wisdom...” (62:2)

Muslim scholars, too, used to recommend to their students to have spiritual training and in seeking knowledge not to go after position, power, or wealth. Mohammad ibn Zakariyya al-Razi, when mentioning the qualifications of medical students, says, “It is urgent a medical student should not learn medicine for the sake of becoming wealthy. Rather, he should know the closest people to God are those who are the most learned, the most just, and the kindest toward other people.”²⁶

In short, in order to secure the spiritual as well as the material welfare of an Islamic society, it is essential to have learning tied with spiritual training.

4. The Holy Qur’an calls the followers of Islam a justly balanced nation:

وَكَذَلِكَ جَعَلْنَاكُمْ أُمَّةً وَسَطًا لِتَكُونُوا شُهَدَاءَ عَلَى النَّاسِ

“Thus we have made of you a justly balanced nation so you might be witnesses over the nation...” (2:143)

And it recommends them to maintain equilibrium between the spiritual and the material dimensions of life:

رَبَّنَا آتِنَا فِي الدُّنْيَا حَسَنَةً وَفِي الْآخِرَةِ حَسَنَةً

“Our Lord, grant us good in this world and good in the hereafter.” (2:201)

وَابْتَغِ فِيمَا آتَاكَ اللَّهُ الدَّارَ الْآخِرَةَ وَلَا تَنْسَ نَصِيبَكَ مِنَ الدُّنْيَا

“And seek by means of what Allah has given you the future abode, and do not neglect your portion of this world.” (28:77)

Therefore, Muslims should not, like western people, become deeply involved in material aspects of life, and should not forget the spiritual dimensions of existence. Muslims should be aware of the fact in the Islamic outlook all material opportunities are permissible but not as an end in themselves. They serve as a ladder for the spiritual progress of man.

Muslims should never forget Islam is radically opposed to the materialistic approach in the acquisition of science and technology and stress they should not be sought for their own sake. This does not in any way delimit the scope of empirical knowledge. It only means, in making progress in this area, they should always remember God and seek His proximity as a primary goal.

In short, today we face two realities: on the one hand, we see the West has progressed in various fields of science and technology tremendously, and on the other hand, this material progress has not brought satisfaction to the Western man. It has rather drawn him to the pitfall of nihilism and, in fact, it has brought mankind to the verge of total annihilation. Under these circumstances, the duty of Muslims is to compensate for their lag in the fields of science and technology, and, by reviving Islamic teachings and the prevailing Islamic outlook; they can guide humanity toward real welfare and happiness.

Notes

1. Kulayani, al-Kafi, vol. 1, p. 30; ibn Majah, Sunan, vol. 1, Introduction, section 17, no. 224.
2. Abu Hamid Mohammad Ghazali Ihya' 'Ulum al-Din, vol. 1, p. 14; Mohammad Baqir Majlisi, Bihar al-Anwar, vol. 1, 180.
3. Sayyid Hassan Shirazi, Kalimah al-Rasul al-A'zam, p. 203.
In al-Khisal (vol. 2, p. 433), Saduq reports, while our Prophet (S) was describing the characteristics of wise men he said, “A wise man does not become tired of seeking knowledge throughout his lifetime.”
4. Kulaayni al-Kufi, vol. 1, p. 32; ibn Majah, Sunan, under no. 223; Abu Dawud al-Sujustani, Sunan, vol. 2, p. 285.
5. Sayuti, al-Jami' al-Saghir (Damascus, 1352 H) vol. 2, p. 657; see also Majllisi, Bahar al-Anwar, vol. 3, pp. 82 - 83.
6. Majlisi, Bihar al-Anwar, vol. 2, p. 16.
7. Ibn Majah, Sunan, Introduction, section 23, no. 250; Sayuti al-Saghir, vol. 1, p. 185.
In another well-known quotation from our Holy Prophet (S) we read:
“We seek refuge in God from useless knowledge.”
(Majlisi, Bihar al-Anwar, vol. 2, p. 32; Ghazali, Ihya al-'Ulum al-Din, vol. 1, p. 2)
8. Harrani, Tuhaf al-'Uqul (Qum, 1394 H) pp. 249 - 250.
9. R. Levy, The Social Structure of Islam (Cambridge, 1975) p. 400.
10. G. Sarton, Introduction to the History of Science vol. 1 (Persian translation), p. 23.
11. Abu Rayhan al-Biruni, Kitab Tahdid Nihayat al-Amakin, Persian translation (by A. Aram) pp. 3 - 4.
12. Abu Rayhan al-Biruni Kitab al-Jamahir (Hyderabad, 1935) p. 5.
13. Ibn Abi Usaybiyah, Tabaqat al-Atibba (Beirut, 1965) p. 552.
14. al-Suduq, Man La Yahduruh al-Faqih (Tehran ed), vol. 4, p. 334. In Bukhari's al-Sahih (champtpr on funeral rites) this tradition is reported and has the same meaning as the one we quoted in the article.
15. M.J. Mughniyah, al-Tafsir al-Kashif, vol. 2, p. 465.

16. Ibn Ikhvah, Kitab Ma'alim al-Qurbah fi Ahkam al-Hisbah (Egypt, 1976), p. 254.
17. M.J. Mughniah, al-Fiqh are al-Mazaheb al-Khamsah (Beirut), p. 499.
18. The statistics are taken from several papers presented (Nov. 1983) at the "International Conference on Science in Islamic Polity" held at Islamabad in November, 1983.
19. Imam Khomeini, Tahri al-Wasilah, vol. 1, p. 485.
20. Sheikh Zayn al-Din al-'Amili Munyah al-Murid (Qum) p. 45.
21. Sayyid Qutb, Fi Zilal al-Qur'an, vol. 2, pp. 560 - 61.
22. Mohammad Baqir Majlisi, Bihar al-Anwar, vol. 2, p. 99; Sayuti, al-Jami' al-Saghir, vol. 2, p. 255.
23. Mohammad Baqir Majlisi, Bihar al-Anwar, vol. 2, p. 105.
24. Abn 'Abd al-Bar, Jami' Bayan al-'Ilm, vol. 1, p. 121, Majlisi, Bihar al-Anwar (vol. 2, p. 97), reports a similar quotation from Imam 'Ali in the following form:
Wisdom is a lost objective of believers; search for it even if it is in the polytheist's possession, because you deserve to have it more than they do."
25. Nahj al-Balaghah (S. al-Saleh, Ed.) p. 393.
26. Mohammad ibn Zakariyya al-Razi, Rasa'il Falsafiyah (Cairo, 1939) p. 108.

Part 3: Philosophy of Science, A Qur'anic Approach

In the Name of God, the Merciful, the Beneficent

The Aim of Understanding Nature

Nature means the physical world, which is, the world with which we come into contact through our senses. In the Holy Qur'an, there are more than 750 verses in reference to the natural phenomena. In most of these verses, the study of the book of creation and the meditation upon its contents has been recommended.

As confirmed by many outstanding Islamic scholars, the Qur'an is not a book of natural science, but rather, one of guidance and enlightenment.

The Qur'anic reference to the natural phenomena is meant to call man's attention to the mighty and glory of the Wise Creator of the universe through quest and meditation upon the natural beings and to encourage him to strive to be in close proximity to Him.

From the viewpoint of the Qur'an, natural phenomena are signs of the Almighty, and any understanding of nature is analogous with understanding the signs through which we attain cognition of the Lord of signs:

وَمِنْ آيَاتِهِ أَنْ خَلَقَ لَكُمْ مِنْ أَنْفُسِكُمْ أَزْوَاجًا لِتَسْكُنُوا إِلَيْهَا وَجَعَلَ بَيْنَكُمْ مَوَدَّةً وَرَحْمَةً ۗ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِقَوْمٍ يَتَفَكَّرُونَ

“And one of the signs is He created mates for you from yourselves in which you may find rest in them, and He put between you love and compassion, most surely there are signs in this for a people who reflect.” (30:21)

وَمِنْ آيَاتِهِ يُرِيكُمُ الْبَرْقَ خَوْفًا وَطَمَعًا وَيُنزِلُ مِنَ السَّمَاءِ مَاءً فَيُحْيِي بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا ۗ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِقَوْمٍ يَعْقِلُونَ

“And one of His signs is He shows you the lightening for fear and for hope and sends down water from the clouds, then gives life therewith to the earth after its death; most surely there are signs in this for a people who understand.” (30:24)

وَمِنْ آيَاتِهِ خَلْقُ السَّمَاوَاتِ وَالْأَرْضِ وَاجْتِذَافُ الْأَلْسِنَاتِ وَالْوَالِدَاتُ ۗ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِلْعَالِمِينَ

“And one of His signs is the creation of the heavens and the earth and the diversity of your tongues and colours; most surely there are signs in this for the learned.” (30:22)

From the Qur'anic viewpoint, understanding nature is not a fruitful undertaking except when it helps us to understand the Wise Creator of this world and to attain close proximity to Him. Understanding nature can promote man's insight towards the cognition of Allah and enables him to better utilize the gifts of Allah for his own eternal felicity and well-being.

The Possibility of Understanding Nature

In the Qur'an, there are many verses inviting man to study nature:

قُلْ انظُرُوا مَاذَا فِي السَّمَاوَاتِ وَالْأَرْضِ

“Say, ‘Consider what is it which is in the heavens and the earth...’”
(10:101)

وَفِي الْأَرْضِ آيَاتٌ لِلْمُوقِنِينَ
وَفِي أَنْفُسِكُمْ أَفَلَا تُبْصِرُونَ

“And in the earth there are signs for those who are sure, and in your own souls (too); will you not then see.” (51:20 - 21)

قُلْ سِيرُوا فِي الْأَرْضِ فَانظُرُوا كَيْفَ بَدَأَ الْخَلْقَ

“Say, ‘Travel on the earth and see how He made the first creation.’”
(29:20)

فَلْيَنْظُرِ الْإِنْسَانُ مِمَّ خُلِقَ

“So let man consider of what he is created.” (86:5)

These verses show this understand nature is possible; otherwise, He would not have recommended its study.

From the following verses, too, we realize man has been endowed with the talent of cognition and he has to exploit this faculty to the best of his ability:

وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا

“And He taught Adam all the names.” (2:31)

عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمَ

“Taught man what (he) knew not.” (96:5)

وَاللَّهُ أَخْرَجَكُمْ مِنْ بُطُونِ أُمَّهَاتِكُمْ لَا تَعْلَمُونَ شَيْئًا وَجَعَلَ لَكُمُ السَّمْعَ وَالْأَبْصَارَ وَالْأَفْئِدَةَ
لَعَلَّكُمْ تَشْكُرُونَ

“And Allah has brought you forth from the wombs of your mothers - you did not know anything - and He gave you hearing and sight and hearts to give thanks.” (16:78)

Moreover, the Qur’an promises:

سَنُرِيهِمْ آيَاتِنَا فِي الْأَفَاقِ وَفِي أَنْفُسِهِمْ حَتَّىٰ يَتَبَيَّنَ لَهُمْ أَنَّهُ الْحَقُّ

“We will soon show them Our signs in the universe and in their own souls, so it will become clear unto them He is indeed the truth.” (41:53)

وَقُلِ الْحَمْدُ لِلَّهِ سِيرِيكُمْ آيَاتِهِ فَتَعْرِفُونَهُ وَمَا رَبُّكَ بِعَافِيٍّ عَمَّا تَعْمَلُونَ

“And say, ‘Praise be to Allah, He will show you His signs so you shall recognize them, nor is your Lord heedless of what you do.’” (27:93)

These verses indicate human beings will eventually come to have a better understanding of the truth about the universe.

The Main Issues in Understanding Nature

Although from the viewpoint of the Qur’an, the ultimate goal in understanding nature is to comprehend and approach God, yet there are certain subsidiary goals, the apprehension of which may be considered as preliminary steps towards this ultimate goal.

These are the issues in connection with natural phenomena, and are pointed out in the Holy Qur'an. We are going to classify them into three groups:

1. Origin and Evolution of Beings and Phenomena

أَوَلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَاوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا وَجَعَلْنَا مِنَ الْمَاءِ كُلَّ شَيْءٍ حَيٍّ

“Do those who disbelieve not see the heavens and the earth were closed up, but We have opened them, and have made of water everything living...” (21:30)

أَلَمْ تَرَ كَيْفَ خَلَقَ اللَّهُ سَبْعَ سَمَاوَاتٍ طِبَاقًا وَجَعَلَ الْقَمَرَ فِيهِنَّ نُورًا وَجَعَلَ الشَّمْسَ سِرَاجًا

“Do you not see how God has created the seven heavens one above another, and made the moon therein a light, and made the sun a lamp?” (71:15 - 16)

الَّذِي أَحْسَنَ كُلَّ شَيْءٍ خَلَقَهُ وَبَدَأَ خَلْقَ الْإِنْسَانِ مِنْ طِينٍ ثُمَّ جَعَلَ نَسْلَهُ مِنْ سُلَالَةٍ مِنْ مَاءٍ مَهِينٍ ثُمَّ سَوَّاهُ وَنَفَخَ فِيهِ مِنْ رُوحِهِ وَجَعَلَ لَكُمُ السَّمْعَ وَالْأَبْصَارَ وَالْأَفْئِدَةَ قَلِيلًا مَّا تَشْكُرُونَ

“Who made good everything in which He has created, and He began the creation of man from dust. Then he made His progeny of an extract of water held in light estimation. Then he made him complete and breathed into him of His spirit and made for you the earth, and the air and the hearts. Little is it you have thanks.” (32:7 - 9)

أَفَلَا يَنْظُرُونَ إِلَى الْإِبِلِ كَيْفَ خُلِقَتْ وَإِلَى السَّمَاءِ كَيْفَ رُفِعَتْ وَإِلَى الْجِبَالِ كَيْفَ نُصِبَتْ وَإِلَى الْأَرْضِ كَيْفَ سُطِحَتْ

“Will they not then consider the camel, how they are created and the heaven, how it is reared aloft, and the mountains, how they are firmly fixed, and the earth, how it is made a vast expanse?” (88:17 - 20)

All these verses indicate we should attempt to discover the origin and evolution of beings, as this will help in enhancing man's faith and expediting his proximity to Allah.

In some verses of the Qur'an, certain natural phenomena are mentioned as indications of the Resurrection:

أَوَلَيْسَ الَّذِي خَلَقَ السَّمَاوَاتِ وَالْأَرْضَ بِقَادِرٍ عَلَىٰ أَنْ يَخْلُقَ مِثْلَهُمْ بَلَىٰ وَهُوَ الْخَلَّاقُ الْعَلِيمُ

“Is not He who created the heavens and the earth, able to create the like of them? Yea! And He is the Creator (of all), the Knower.” (36:81)

وَاللَّهُ الَّذِي أَرْسَلَ الرِّيحَ فَتُثِيرُ سَحَابًا فُسُقْنَاهُ إِلَىٰ بَلَدٍ مَيِّتٍ فَأَحْيَيْنَا بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا كَذَلِكَ النُّشُورُ

“And God is He who sends the winds so they raise a cloud, then we drive it on to a dead country, and therewith We give life to the earth after its death, even so are the uprising.” (35:9)

يَا أَيُّهَا النَّاسُ إِنَّ كُنْتُمْ فِي رَيْبٍ مِّنَ الْبُعْثِ فَإِنَّا خَلَقْنَاكُمْ مِّنْ تُرَابٍ ثُمَّ مِّنْ نُطْفَةٍ ثُمَّ مِّنْ عَلَقَةٍ

الْأَرْضِ هَامِدَةً فَإِذَا أَنزَلْنَا عَلَيْهَا الْمَاءَ اهْتَزَّتْ وَرَبَتْ وَأُنبَتَتْ مِنْ كُلِّ زَوْجٍ بَهِيجٍ

“Oh people, if you are in doubt about the Resurrection, then surely We created you from dust, then from a small life-germ, then from a clot, then from a lump of flesh, complete in make and incomplete...and you see the earth’s sterile land, but when We send down on it the water, it stirs and swells and brings forth of every kind of beautiful herbage.” (22:5)

2. The Discovery of Order, Coordination and Purpose in Nature

Many of the verses in the Qur’an mention the existence of order, coordination, and purpose in nature as evidences confirming the existence of the Wise, Omniscient Creator. These verses can be classified into several groups:

a) Some verses specify the creation of the heavens and the earth was not in vain, but had indeed some purpose behind it. For example:

وَهُوَ الَّذِي خَلَقَ السَّمَاوَاتِ وَالْأَرْضَ بِالْحَقِّ

“And He it is Who has created the heavens and the earth in truth...” (6:73)

وَمَا خَلَقْنَا السَّمَاءَ وَالْأَرْضَ وَمَا بَيْنَهُمَا لَاعِبِينَ

“And We did not create the heavens and the earth and what is between them for sport.” (21:16)

أَفَحَسِبْتُمْ أَنَّمَا خَلَقْنَاكُمْ عَبَثًا وَأَنَّكُمْ إِلَيْنَا لَا تُرْجَعُونَ

“What! Did you then think We had created you in vain and you shall not be returned to Us?” (23:115)

b) It is mentioned in some verses in which events follow a natural course for a certain pre-determined period:

أَوَلَمْ يَتَفَكَّرُوا فِي أَنفُسِهِمْ مَا خَلَقَ اللَّهُ السَّمَاوَاتِ وَالْأَرْضَ وَمَا بَيْنَهُمَا إِلَّا بِالْحَقِّ وَأَجَلٍ

مُسَمًّى وَإِنَّ كَثِيرًا مِّنَ النَّاسِ بِلِقَاءِ رَبِّهِمْ لَكَافِرُونَ

“Do they not reflect within themselves: Allah did not create the heavens and the earth and what is between them but in truth, and (for) an appointed term? And most surely most of the people are deniers of the meeting of their Lord.” (30:8)

اللَّهُ الَّذِي رَفَعَ السَّمَاوَاتِ بِغَيْرِ عَمَدٍ تَرَوْنَهَا ثُمَّ اسْتَوَىٰ عَلَى الْعَرْشِ وَسَحَّرَ الشَّمْسَ

وَالْقَمَرَ كُلًّا يَجْرِي لِأَجَلٍ مُّسَمًّى ۚ يُدَبِّرُ الْأَمْرَ يُفَصِّلُ الْآيَاتِ لَعَلَّكُمْ بِلِقَاءِ رَبِّكُمْ تُوقِنُونَ

“Allah is He who raised the heavens without any pillars which you see, and He is firm in power, and He made the sun and the moon subservient (to you), each one pursues its course to an appointed time, and He regulates the affair, making clear the signs which you may be certain of meeting your Lord.” (13:2)

c) Some verses tell us in which the whole process of creation and the course of events in nature follow a proper reckoning and measure (for instance, everything there is a definite size and measure):

الشَّمْسُ وَالْقَمَرُ بِحُسْبَانٍ

“The sun and moon follow a reckoning.” (55:5)

وَإِنْ مِنْ شَيْءٍ إِلَّا عِنْدَنَا خَزَائِنُهُ وَمَا نُنزِلُهُ إِلَّا بِقَدَرٍ مَعْلُومٍ

“And there is not a thing but with Us are the treasures of it, and We do not send it down but in a known measure.” (15:21)

وَكُلُّ شَيْءٍ عِنْدَهُ بِمِقْدَارٍ

“And there is a measure with Him of everything.” (13:8)

وَخَلَقَ كُلَّ شَيْءٍ فَقَدَرَهُ تَقْدِيرًا

“...He created everything then ordained for it a measure.” (25:2)

وَالسَّمَاءَ رَفَعَهَا وَوَضَعَ الْمِيزَانَ

“And the heaven, He raised it high and he made the balance.” (55:7)

وَأُنَبِّئُهَا فِيهَا مِنْ كُلِّ شَيْءٍ مَوْزُونٍ

“...And caused to grow in it of every suitable thing.” (15:19)

It is precisely for the very existence of this order which laws of nature become significant. The scholars of natural science would not have so ardently pursued the discovery of these laws had they not been subconsciously aware of this very natural order.

Form the above-mentioned verses and those ensuing, one can conclude the discovery of order and co-ordination in nature (i.e. the laws of nature) and the certitude of God’s handiwork is of great significance in understanding nature:

هُوَ الَّذِي جَعَلَ الشَّمْسَ ضِيَاءً وَالْقَمَرَ نُورًا وَقَدَرَهُ مَنَازِلَ لِتَعْلَمُوا عَدَدَ السِّنِينَ وَالْحِسَابَ ۗ مَا

خَلَقَ اللَّهُ ذَلِكَ إِلَّا بِالْحَقِّ ۗ يُفَصِّلُ الْآيَاتِ لِقَوْمٍ يَعْلَمُونَ

“He it is who made the sun a shining brightness and the moon a light, and ordained for it mansions which you might know the computation of years and reckoning. God did not create it but in truth; He makes the signs manifest for people who know.” (10:5)

مَا تَرَىٰ فِي خَلْقِ الرَّحْمَنِ مِنْ تَفَافُوتٍ ۗ فَارْجِعِ الْبَصَرَ هَلْ تَرَىٰ مِنْ فُطُورٍ

“...You see no congruity in the creation of the Beneficent God; then look again, can you see any disorder?” (67:3)

3. Making a Legitimate Use of Natural Means Prepared by God (for Man)

In a good number of verses God mentions the gifts He has granted man:

وَسَخَّرَ لَكُمْ مَا فِي السَّمَاوَاتِ وَمَا فِي الْأَرْضِ جَمِيعًا

“And He has made subservient to you whatsoever is in the heavens and whatsoever is in the earth.” (45:13)

وَلَقَدْ مَكَّنَّاكُمْ فِي الْأَرْضِ وَجَعَلْنَا لَكُمْ فِيهَا مَعَايِشَ ۗ قَلِيلًا مَّا تَشْكُرُونَ

“And certainly We have established you in the earth and made in it means of livelihood for you, little it is in which you give thanks.” (7:10)

وَمِنْ رَحْمَتِهِ جَعَلَ لَكُمُ اللَّيْلَ وَالنَّهَارَ لِتَسْكُنُوا فِيهِ وَلِتَبْتَغُوا مِنْ فَضْلِهِ وَلَعَلَّكُمْ تَشْكُرُونَ

“And out of His mercy He has made for you the night and day, which you may rest therein, and which you seek of His grace and which you give thanks.” (28:73)

وَمِنْ آيَاتِهِ أَنْ يُرْسِلَ الرِّيحَ مُبَشِّرَاتٍ وَلِيُذِيقَكُمْ مِنْ رَحْمَتِهِ وَلِتَجْرِيَ الْفُلُكُ بِأَمْرِهِ وَلِتَبْتَغُوا مِنْ

فَضْلِهِ وَلَعَلَّكُمْ تَشْكُرُونَ

“And one of His signs is which He sends forth the winds bearing good news and which He may make you taste His mercy, and which the ships may run by His command and which you may seek of His grace, and which you may be grateful.” (30:46)

وَهُوَ الَّذِي جَعَلَ لَكُمُ النُّجُومَ لِتَهْتَدُوا بِهَا فِي ظُلُمَاتِ الْبَرِّ وَالْبَحْرِ ۗ قَدْ فَصَّلْنَا الْآيَاتِ لِقَوْمٍ

يَعْلَمُونَ

“And He it is who has made the stars for you, which you might follow the right way thereby in the darkness of the land and the sea, truly We have made plain the communication for a people who know.” (6:97)

In these verses, the reason for reminding man of Allah’s blessings is to make him familiar with them, to urge him to use them, and, to offer his thanks to Allah. Thanksgiving means to use God’s blessings in the appropriate way for which they have been bestowed by the Almighty. It is thus important for the believer to make a conscientious use of Allah’s bounties, leading society towards eternal felicity. Hence, technology, which is the practical use of natural means, will be instrumental in realizing Divine goals.

Ways of Understanding Nature

Some Qur’anic verses tell us about the ways of understanding nature. We begin our discussion with a glorious verse:

وَاللَّهُ أَخْرَجَكُمْ مِنْ بُطُونِ أُمَّهَاتِكُمْ لَا تَعْلَمُونَ شَيْئًا وَجَعَلَ لَكُمُ السَّمْعَ وَالْأَبْصَارَ وَالْأَفْئِدَةَ ۗ

لَعَلَّكُمْ تَشْكُرُونَ

“And God has brought you forth from the wombs of your mothers; you did not know anything, and He gave you hearing and sight and hearts.” (16:78)

It says understanding is attained through eyes, ears, and intellect. Here, from amongst external senses, only sight and hearing have been mentioned, because they are the main tools with the help of which one acquires knowledge of the physical world. However, one can deduct from the Holy Qur’an in which the senses of taste, smell, and touch are also useful in giving us valuable information about the external world. Here we quote three verses:

فَلَمَّا دَاقَا الشَّجَرَةَ بَدَتْ لَهُمَا سَوْآتُهُمَا وَطَفِقَا يَخْصِفَانِ عَلَيْهِمَا مِنْ وَرَقِ الْجَنَّةِ

“...So when the tasted of the tree, their shameful parts became manifest to them, and they both began to cover themselves with the leave of the garden...” (7:22)

وَلَمَّا فَصَلَتِ الْعِيرُ قَالَ أَبُوهُمْ إِنِّي لَأَجِدُ رِيحَ يُوسُفَ لَوْلَا أَنْ تُفَنِّدُونِ

“And when the caravan had departed, their father said, ‘Most surely I smell the scent of Yusuf, unless you pronounce me to be weak in judgment.’” (12:94)

وَلَوْ نَزَّلْنَا عَلَيْكَ كِتَابًا فِي قِرْطَاسٍ فَلَمَسُوهُ بِأَيْدِيهِمْ لَقَالَ الَّذِينَ كَفَرُوا إِنَّ هَذَا إِلَّا سِحْرٌ

مُؤَيَّنٌ

“And if we had sent to you a writing on a paper, then they had touched it with their hands, certainly those who disbelieve would have said, ‘This is nothing by clear enchantment.’” (6:7)

The word “Fuw’ad” has been interpreted as a means of perception and reasoning. Heart has also been mentioned as a means of understanding and perception.

أَفَلَمْ يَسِيرُوا فِي الْأَرْضِ فَتَكُونَهُمْ قُلُوبٌ يَعْقِلُونَ بِهَا أَوْ آدَانٌ يَسْمَعُونَ بِهَا

“Have they not travelled in the land so they should have hearts with which to understand?” (22:46)

لَهُمْ قُلُوبٌ لَا يَفْقَهُونَ بِهَا

“...They have hearts with which they do not understand...” (7:179)

وَطُبِعَ عَلَى قُلُوبِهِمْ فَهُمْ لَا يَفْقَهُونَ

“And a seal is set on their hearts so they do not understand.” (9:87)

إِنَّ فِي ذَلِكَ لَذِكْرًا لِمَنْ كَانَ لَهُ قَلْبٌ

“Most surely there is a reminder in this for him who has a heart.” (50:37)

أُولَئِكَ الَّذِينَ طَبَعَ اللَّهُ عَلَى قُلُوبِهِمْ وَسَمِعِهِمْ وَأَبْصَارِهِمْ وَأُولَئِكَ هُمُ الْعَافِلُونَ

“These are they on whose hearts and hearing and eyes. God has set a seal and these are the heedless ones.” (16:108)

In many Islamic works, too, “heart” has been said to be a tool of reasoning. It has been cited by Imam al-Sadiq (a.s):

فمنها قلبه الذي به يعقل ويفقه ويفهم

“Among his organs is his heart which is the means of reasoning, perception and comprehension.”¹

It is also quoted from Imam ‘Ali ibn Mohammad Baqir:

دل القراءان واخبار الرسول (ص) أن القلب مالك لجمع الحواس يسحح أفعالها ولا يبطل

ما القلب سئ

“The Qur’an and the Traditions of the Prophet (S) indicate the heart is the lord of all senses and co-ordinates their deeds, and whatever the heart sets right, nothing can spoil.”²

Through the verses of the Qur'an, we intend to deduce the channels through which we understand nature are:

1. External senses (by means of which observation and experimentation takes place).
2. Intellect, unpolluted of vices (dominant over desires and fancies, and free from blind imitation).
3. Revelation and inspiration.

The Role of Observation and Reasoning in Understanding Nature

There are a number of verses in the Holy Qur'an which encourage man to use his senses in search of truth. Here are some examples of those verses:

قُلْ سِيرُوا فِي الْأَرْضِ فَانظُرُوا كَيْفَ بَدَأَ الْخَلْقَ

“Say, ‘Travel on the earth and see how He made the first creation.’” (29:20)

قُلْ انظُرُوا مَاذَا فِي السَّمَاوَاتِ وَالْأَرْضِ

“Say, ‘Consider what is in the heavens and the earth.’” (10:101)

هَلْ أَتَاكَ حَدِيثُ الْعَاشِيَةِ

“Will they not then consider the camels, how they were created.” (88:1)

أَوَلَمْ يَرَوْا إِلَى الْأَرْضِ كَيْفَ بَدَأْنَا فِيهَا مِنْ كُلِّ زَوْجٍ كَرِيمٍ

“Do they not see the earth, how many of every noble kind have caused to grow in it?” (26:7)

In these verses, observation and seeing (vision) imply “seeing with the help of right reasoning.”³ In a number of cases certain practical experiments are mentioned as means for acquiring knowledge. We are going to cite three examples of them:

a) Through a crow, Allah teaches Cain how to bury a dead body:

فَبَعَثَ اللَّهُ غُرَابًا يَبْحَثُ فِي الْأَرْضِ لِيُرِيَهُ كَيْفَ يُورِي سَوْءَةَ أَخِيهِ ۗ قَالَ يَا وَيْلَتَا أَعَجَزْتُ أَنْ أَكُونَ مِثْلَ هَذَا الْغُرَابِ فَأُوْرِي سَوْءَةَ أَخِي ۗ فَأَصْبَحَ مِنَ النَّادِمِينَ

“Then God sent a crow, digging up the earth, so He might show him (Cain) how he should cover the dead body of his brother. He said, “Woe me, do I lack the strength in which I should be like this crow and cover the dead body of my brother? So he became of those who regret.” (5:31)

b) God teaches the rightful man the possibility of giving new life to the dead:

أَوْ كَالَّذِي مَرَّ عَلَى قَرْيَةٍ وَهِيَ خَاوِيَةٌ عَلَى عُرُوشِهَا قَالَ أَنَّى يُحْيِي هَذِهِ اللَّهُ بَعْدَ مَوْتِهَا ۗ فَأَمَاتَهُ اللَّهُ مِائَةً عَامٍ ثُمَّ بَعَثَهُ ۗ قَالَ كَمْ لَبِثْتَ ۗ قَالَ لَبِثْتُ يَوْمًا أَوْ بَعْضَ يَوْمٍ ۗ قَالَ بَلْ لَبِثْتَ مِائَةً عَامٍ فَانظُرْ إِلَى طَعَامِكَ وَشَرَابِكَ ۗ لَمْ يَسْتَنْنَهُ ۗ وَانظُرْ إِلَى جِمْارِكَ وَلِنَجْعَلَكَ آيَةً لِلنَّاسِ ۗ وَانظُرْ إِلَى الْعِظَامِ كَيْفَ نُنشِزُهَا ثُمَّ نَكْسُوهَا حُجْمًا ۗ فَلَمَّا تَبَيَّنَ لَهُ قَالَ أَعْلَمُ أَنَّ اللَّهَ عَلَىٰ كُلِّ شَيْءٍ قَدِيرٌ

“Or the like of him who passed by a town, and it had fallen down upon its roofs, he said, ‘When will Allah give it life after its death?’ So Allah

caused him to die for a hundred years, then raised him to life. He said, 'How long have tarried?' 'He said (in reply), 'I have tarried a day, or a part of a day.' Said He, 'Nay, you have tarried a hundred years, look at your food and drink, years have not passed over it, and look at your ass and so We may make you a sign to men, and look at the bones, how we set the together then clothed them with flesh, so when it became clear to him, he said, 'I know Allah has power over all things.'" (2:259)

c) God shows Abraham how He gives life to the dead:

وَإِذْ قَالَ إِبْرَاهِيمُ رَبِّ أَرِنِي كَيْفَ تُحْيِي الْمَوْتَىٰ ۗ قَالَ أَوَلَمْ تُؤْمِنْ ۗ قَالَ بَلَىٰ ۗ وَ لَكِن لِّيَطْمَئِنَّ قَلْبِي ۗ قَالَ فَخُذْ أَرْبَعَةً مِّنَ الطَّيْرِ فَصُرْهُنَّ إِلَيْكَ ثُمَّ اجْعَلْ عَلَىٰ كُلِّ جَبَلٍ مِّنْهُنَّ جُزْءًا ثُمَّ ادْعُهُنَّ يَأْتِينَكَ سَعْيًا ۗ وَاعْلَمْ أَنَّ اللَّهَ عَزِيزٌ حَكِيمٌ

"And when Abraham said, 'My Lord, show me how You give life to the dead.' He said, 'What, do you not believe?' He said, 'Yes, which my heart may be at east.' He said, 'Then take four birds, then train them to follow you, then place on every mountain a part of them, then call them, they will come to you fling, and know Allah is Mighty, Wise.'" (2:260)

Besides, there many tangible parables in the Qur'an which are meant to teach one something perceptible:

مَثَلُ الَّذِينَ يُنْفِقُونَ أَمْوَالَهُمْ فِي سَبِيلِ اللَّهِ كَمَثَلِ حَبَّةٍ أَنبَتَتْ سَبْعَ سَنَابِلٍ فِي كُلِّ سُنْبُلَةٍ مِائَةٌ حَبَّةٌ

"The parable of those who spend their property in the way of God is as the parable of a grain growing seven ears (with) a hundred grains in every ear." (2:261)

وَمَثَلُ كَلِمَةٍ خَبِيثَةٍ كَشَجَرَةٍ خَبِيثَةٍ اجْتُثَّتْ مِنْ فَوْقِ الْأَرْضِ مَا لَهَا مِنْ قَرَارٍ

"And the parable of an evil word is an evil tree pulled from the earth's surface, it has no stability." (14:26)

اللَّهُ نُورُ السَّمَاوَاتِ وَالْأَرْضِ ۗ مَثَلُ نُورِهِ كَمِشْكَاةٍ فِيهَا مِصْبَاحٌ ۗ الْمِصْبَاحُ فِي زُجَاجَةٍ ۗ الزُّجَاجَةُ كَأَنَّهَا كَوْكَبٌ دُرِّيٌّ يُوقَدُ مِنْ شَجَرَةٍ مُّبَارَكَةٍ زَيْتُونَةٍ لَّا شَرْقِيَّةٍ وَلَا غَرْبِيَّةٍ يَكَادُ زَيْتُهَا يُضِيءُ وَلَوْ لَمْ تَمْسَسْهُ نَارٌ ۗ نُورٌ عَلَىٰ نُورٍ ۗ يَهْدِي اللَّهُ لِنُورِهِ مَن يَشَاءُ ۗ وَيَضْرِبُ اللَّهُ الْأَمْثَالَ لِلنَّاسِ ۗ وَاللَّهُ بِكُلِّ شَيْءٍ عَلِيمٌ

"Allah is the light of the heavens and the earth, a likeness of his light is as a niche in which is a lamp, the lamp is in a glass, (and) the glass is as it were a brightly shining star, lit from a blessed olive tree, neither eastern nor western, the oil whereof almost gives light though fire touch it not; light upon light, Allah guides to his light whom He pleases." (24:35)

وَاللَّهُ الَّذِي أَرْسَلَ الرِّيحَ فَتُثِيرُ سَحَابًا فَسُقْنَاهُ إِلَىٰ بَلَدٍ مَّيِّتٍ فَأَحْيَيْنَا بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا ۗ كَذَلِكَ النُّشُورُ

“And God is He Who sent the winds so they raise a cloud, then We drive it on to a dead country and therewith We give life to the earth after its death, even so are the quickening.” (35:9)

Therefore, there is no doubt the Qur’an considers external senses the primary tools in getting a part of our knowledge, but both in the above verses, and in many others to come, sensory stimuli have not been suggested as the sole source of nature’s cognition. In order to substantiate this claim we can advance the following arguments:

1. In most of the Qur’anic verses, wherever natural phenomena are mentioned, it is explicitly pointed out the perception of Divine signs in nature and their relation to the Lord of signs is within the reach of men to intellect, capable of reflection. Here are a few examples such verses:

هُوَ الَّذِي أَنْزَلَ مِنَ السَّمَاءِ مَاءً لَكُمْ مِنْهُ شَرَابٌ وَمِنْهُ شَجَرٌ فِيهِ تُسِيمُونَ
يُنْبِتُ لَكُمْ بِهِ الزَّرْعَ وَالزَّيْتُونَ وَالنَّخِيلَ وَالْأَعْنَابَ وَمِنْ كُلِّ الثَّمَرَاتِ إِنَّ فِي ذَلِكَ لَآيَةً لِقَوْمٍ
يَتَفَكَّرُونَ

“He it is who sends down water from the heaven for you, it gives drink, and by it (grow) the trees upon which you pasture. He causes to grow for you thereby herbage, and the olives and the palm trees, and the grapes and of all the fruits, must surely there is a sign in this for a people who reflect.” (16:10 - 11)

يُنْبِتُ لَكُمْ بِهِ الزَّرْعَ وَالزَّيْتُونَ وَالنَّخِيلَ وَالْأَعْنَابَ وَمِنْ كُلِّ الثَّمَرَاتِ إِنَّ فِي ذَلِكَ لَآيَةً لِقَوْمٍ
يَتَفَكَّرُونَ

“And He is it Who made the stars for you in which you might follow the right way thereby in the darkness of the land and the sea. Truly, We have made plain the communications for a people who know.” (6:97)

وَسَخَّرَ لَكُمْ اللَّيْلَ وَالنَّهَارَ وَالشَّمْسَ وَالْقَمَرَ وَالنُّجُومَ مُسَخَّرَاتٍ بِأَمْرِهِ إِنَّ فِي ذَلِكَ لَآيَاتٍ
لِقَوْمٍ يَعْقِلُونَ

“And He has made subservient for you the night and the day and the sun and the moon and the stars are subservient by His commandment, most surely there are signs in these for a people who ponder.” (16:12)

وَمِنْ كُلِّ شَيْءٍ خَلَقْنَا زَوْجَيْنِ لَعَلَّكُمْ تَذَكَّرُونَ

“And of everything We have created pairs which you may be mindful.” (51:49)

أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنَابِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ زَرْعًا مُخْتَلِفًا أَلْوَانُهُ
ثُمَّ يَهَيِّجُ فَتْرَاهُ مُصْفَرًّا ثُمَّ يَجْعَلُهُ حُطَامًا إِنَّ فِي ذَلِكَ لَذِكْرًا لِأُولِي الْأَبْصَارِ

“Do you not see God sends down water from the cloud, then makes it go along in the earth in springs, then brings forth therewith herbage of various colours, when it withers so you see it becoming yellow, the He makes it a thing crushed and broken into pieces? Most surely there is a reminder in these for men of understanding.” (39:21)

وَهُوَ الَّذِي أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ نَبَاتَ كُلِّ شَيْءٍ فَأَخْرَجْنَا مِنْهُ خَضِرًا نُخْرِجُ مِنْهُ
حَبًّا مُتَرَاكِبًا وَمِنَ النَّخْلِ مِنْ طَلْعِهَا قِنْوَانٌ دَانِيَةٌ وَجَنَّاتٍ مِنْ أَعْنَابٍ وَالزَّيْتُونَ وَالرُّمَّانَ مُشْتَبِهًا
وَغَيْرَ مُتَشَابِهٍ ۗ انظُرُوا إِلَى ثَمَرِهِ إِذَا أَثْمَرَ وَيَنْعِهِ ۗ إِنَّ فِي ذَلِكُمْ لَآيَاتٍ لِقَوْمٍ يُؤْمِنُونَ

“And He it is Who has brought you into being from a single soul, then there is (for you) a resting place and a depository indeed. We have made plain the communications for a people who understand.” (6:99)

The use of such words as “Tafakkur, Ta‘aqqul and Tafaqquh...” in the above verses indicate (with different shades of emphasis) in which to understand nature, one should make use of one’s intellect.

The word “tafakkur” (meditation) in many of the verses means reflection on existing information and moving towards fresh awareness.⁴

(a) The words “Ta‘aqqul and Tafaqquh” show the intellectual advancement. Therefore, the cognition which originates through the senses should be backed by reflection and reasoning in order to enhance our knowledge. The following quotations from Imam al-Sadiq (a.s.) confirm this point:

إن أول الأمور ومبداها وقوتها وعمارتها التي لا ينافع بشيء إلا به ، العقل الذي جعله الله
زينة لخلقه ونورا لهم ، فبالعقل عرف العباد خالقهم وإنهم مخلوقون ، إنه المدبر لهم وإنهم
المدبرون..واستدلوا بعقولهم على ما رأوا من خلقه ، ومن سمائه وأرضه ، وشمسه وقمره ،
وليله ونهاره ، وبان له ولهم خالقا ومدبرا لم يزل ولا يزول ، وعرفوا به الحسن من القبيح ، وإن
الظلمة في الجهل ، وإن النور في العلم ، فهذا ما دلهم عليه العقل

“The origin and commencement of everything and the cause of their flourishing is the intellect, without which nothing can be achieved. God has endowed His servants with the light and ornament of intellect.

By means of intellect the servants know their Creator and get to understand He is the Ruler and they are under His rule, He is immortal and they are mortal. Their intellect directs them to infer through the observation of the handiwork of God p- such as the heavens, the earth, the sun, the moon, the day and night... - There is a Creator and controller of all these beings, and He has always been and will exist forever. It is through the intellect which man recognizes grace from disgrace, and realizes light is associated with knowledge and ignorance bears darkness. This inference can be made only through the intellect.”⁵

b) Sheikh Mufid in his book al-Irshad narrates in which Abu Shakir Daysani said to Imam al-Sadiq (a.s.), “You know we do not accept anything unless we see, hear, taste, smell, or feel it with our senses.”⁶

Imam al-Sadiq (a.s.) answered,

ذكرت الحواس الخمس وهي لا تنفع في الإستنباط إلا بدليل ، كما لا تقطع الظلمة بغير

مصباح

“You mentioned the five senses, but they never find the truth unless their finding are steered through the channel of intellect, in the same manner as darkness cannot be removed except with a lamp.”

c) There is another quotation from Imam al-Sadiq which says,⁷

فإنك لو رأيت حجرا يرتفع في الهواء ، علمت أن راميا رمى به فليس هذا العلم من قبل البصر ، بل من قبل العقل ، لأن العقل هو الذي يبرمه ، فيعلم أن الحجر لا يذهب علوا تلقاء نفسه

“When you see a stone moving upwards in the air, you know some person has thrown it. This knowledge has not come to you through your eyes, but through the channel of intellect, because it is intellect which infers a stone go up in the air by itself.”

Therefore, it can be concluded through observation and experimentation are indispensable for obtaining information from the external world, they are not sufficient means. Should we rely solely on our external senses, we won't be able to interpret the physical world, and find the relation between natural events.

In fact, people are no different from other animals as far as external senses are concerned, and some of the animals in this respect, are even better equipped than human beings. What distinguish people from animals are their talents for profound observation of the world and the interpretation of events. And this is due to a faculty called rational faculty, which is capable of relating the signs and symbols, attained through the senses, and interpreting the universe. Senses give us a series of isolated signs and symbols, and intellect discovers their inter-relationship.

2. In the Qur'an, there are many verses denoting in some people eyes, ears, and hearts do not perform their roles, and while seeing the Almighty's signs in nature, they do not meditate on them, nor do they benefit from those (blessings):

وَكَايَتٍ مِنْ آيَةٍ فِي السَّمَاوَاتِ وَالْأَرْضِ يَمُرُّونَ عَلَيْهَا وَهُمْ عَنْهَا مُعْرِضُونَ

“And how many a sign in the heavens and the earth they pass by, yet they turn aside from it.” (12:105)

لَهُمْ قُلُوبٌ لَا يَفْقَهُونَ بِهَا وَهُمْ أَعْيُنٌ لَا يُبْصِرُونَ بِهَا وَهُمْ آذَانٌ لَا يَسْمَعُونَ بِهَا

“...They have hearts with which they do not understand, and they have eyes with which they do not see, and they have ears with which they do not hear.” (7:179)

أَمْ لَهُمْ أَعْيُنٌ يُبْصِرُونَ بِهَا أَمْ لَهُمْ آذَانٌ يَسْمَعُونَ بِهَا

“...Or have they eyes with which they see, or have the ears with which they hear...?” (7:195)

وَلَا تَكُونُوا كَالَّذِينَ قَالُوا سَمِعْنَا وَهُمْ لَا يَسْمَعُونَ

“And be not like those who said, ‘We hear,’ and they did not hear.” (8:21)

وَإِنْ تَدْعُوهُمْ إِلَى الْهُدَى لَا يَسْمَعُوا وَتَرَاهُمْ يَنْظُرُونَ إِلَيْكَ وَهُمْ لَا يُبْصِرُونَ

“And if you invite them to guidance, they do not hear, and you see them looking towards you, yet they do not see.” (7:198)

أَفَلَمْ يَسِيرُوا فِي الْأَرْضِ فَتَكُونَهُمْ قُلُوبٌ يَعْقِلُونَ بِهَا أَوْ آذَانٌ يَسْمَعُونَ بِهَا ۗ فَإِنَّهَا لَا تَعْمَى الْأَبْصَارُ وَلَكِنَّ تَعْمَى الْقُلُوبُ الَّتِي فِي الصُّدُورِ

“Have they not travelled in the land so they should have hearts with which to understand or ears with which to hear? For surely it is not eyes which are blind, but blind are the hearts which are in the breasts.” (22:46)

It is quoted from our great Prophet (S) in which:⁸

ليس الأعمى من يعمى بصره ، إنما الأعمى من تعمى بصيرته

“Blind is not a person who lacks eyes, but one who lack insight.”

Some people, interpreting the above verses, rightly say we have two kinds of sight and hearing - the physical or external and spiritual or internal ones. The external organs of sight and hearing are tools for perception, and the internal ones serve for the appropriate use of those tools.

Imam Fakhr al-Din Razi refers to the following verse:

مَثَلُ الْفَرِيقَيْنِ كَالْأَعْمَى وَالْأَصَمِّ وَالْبَصِيرِ

“The likeness of the two parties is as of the blind and the deaf.” (11:24)

And says, “There is a similarity in the creation of body and spirit, in which both have eyes and ears. In the same way a deaf and blind person, in absolute silence and darkness, finds himself at a loss, an astray, irreligious and ignorant person’s heart too, lacks the power of sight and hearing and he is lost in the wilderness.”⁹

We would rather interpret the above verses in this way: Eyes, ears and other external senses are a means for the intellect, and their acquisitions could only be complete and meaningful if they go through the channel of the intellect. Eyes see, but the intellect interprets the result of sight and issues the verdict.¹⁰ The function of sight can be considered complete when it goes with insight, i.e. when sensory is supplemented with (supra-sensory) intellect. Here a few verses confirming this interpretation:¹¹

أَفَأَنْتَ تُسْمِعُ الصُّمَّ وَلَوْ كَانُوا لَا يَعْقِلُونَ

“...But can you make the deaf to hear though they will not understand.” (10:42)

وَلَا تَكُونُوا كَالَّذِينَ قَالُوا سَمِعْنَا وَهُمْ لَا يَسْمَعُونَ وَلَا تَكُونُوا كَالَّذِينَ قَالُوا سَمِعْنَا وَهُمْ لَا يَسْمَعُونَ وَلَا تَكُونُوا كَالَّذِينَ قَالُوا سَمِعْنَا وَهُمْ لَا يَسْمَعُونَ

“And be not like those who said, ‘we hear,’ and they did not hear. Surely the vilest of animals in Allah’s sight are the deaf, the dumb, who do not understand.” (8:21 - 22)

It has been quoted from Imam ‘Ali (a.s.) in Nahj al-Balagha.¹²

فإننا البصير من سمع فتفكر ونظر فأبصر ، وانتفع بالعبير ثم سلك جددا واضحا وتجنب

الصرعة في المهاوي والضلال في المغاوي

“The observer is one who reflects on what he has heard and reflects upon what he has seen, and makes use of his instructive experience in choosing to

tread on clear paths wherein he can avoid falling into hallows and straying into pitfalls.”

There is a statement narrated from Imam al-Sadiq (a.s.):¹³

زعمت أن الأشياء لا تدرك إلا بالحواس فإني أخبرك أنه ليس للحواس دلالة على الأشياء ولا فيها معرفة إلا بالقلب فإنه دليلها ومعرفها الأشياء التي يدعي أن القلب لا يعرفها إلا بما... إن القلب يفكر بالعقل الذي فيه

"إن الله تعالى جعل القلب مدبراً للجسد ، به يسمع وبه يبصر وهو القاضي والأمير عليه ، وبه ينزل الفرح والحزن ، وبه ينزل الالم ، إن فسد شيء من الحواس بقى على حاله ، وإن فسد القلب ذهب جميعاً - لا يسمع ولا يبصر

“...You thought things could not be felt except through senses. Let me advise you, senses do not directly lead you to objects, and we know objects only through the channel of heart, therefore, it is heart which directs the senses and present objects to the senses, the objects you (mistakenly) claim or not known to the heart but through senses...Heart reflects by the intellect which it possesses.

The Almighty God made heart the administrator of the body and it hears and sees through the heart. Heart is the judge and ruler of the body. Should the heart delay, the body cannot proceed, should it proceed the body cannot tarry.

Senses see and hear through the heart, should it order the sense, they obey, should it hinder them, and they stop. Happiness and sorrow, too, befall man through the heart and make him endure them. If senses fail and decay, the heart goes on functioning, but with the decay of the heart all the senses disappear - man neither sees nor hears.”

3. The Qur’anic verses indicate in addition to sense-rooted cognitions, there are non-sensory cognitions, too. These verses fall into two groups:

(a) In one group of the verses Allah refutes the arguments of the people who consider their external senses as the only reliable source for their knowledge:

وَإِذْ قُلْتُمْ يَا مُوسَىٰ لَنْ نُؤْمِنَ لَكَ حَتَّىٰ نَرَىٰ اللَّهَ جَهْرَةً فَأَخَذَتْكُمُ الصَّاعِقَةُ وَأَنْتُمْ تَنْظُرُونَ

“And when you said, ‘Oh Musa, we shall not believe in you until we see Allah manifestly, so the punishment over-took you while you looked on.’” (2:55)

وَقَالُوا لَنْ نُؤْمِنَ لَكَ حَتَّىٰ تَفْجُرَ لَنَا مِنَ الْأَرْضِ يَنْبُوعًا أَوْ تَكُونَ لَكَ جَنَّةٌ مِنْ نَجِيلٍ وَعَنْبٍ فَتُفَجَّرَ الْأَنْهَارَ خِلَافَهَا تَفْجِيرًا أَوْ تُسْقِطَ السَّمَاءَ كَمَا زَعَمْتِ عَلَيْنَا كِسْفًا أَوْ تَأْتِيَنَا بِاللَّهِ وَالْمَلَائِكَةِ قَبِيلًا أَوْ يَكُونَ لَكَ بَيْتٌ مِنْ زُخْرَفٍ أَوْ تَرْفَىٰ فِي السَّمَاءِ وَلَنْ نُؤْمِنَ لِرَبِّكَ حَتَّىٰ تُنَزِّلَ عَلَيْنَا مِائِدًا نَقْرُوهُ ۗ قُلْ سُبْحَانَ رَبِّي هَلْ كُنْتُ إِلَّا بَشَرًا رَسُولًا

“And they said, ‘We will by no means believe you until you cause a fountain to gush forth from the earth for us. Or you should have a garden of palms and grapes in the midst of which you should cause rivers to flow

forth gushing out. Or you should cause the heaven to come down upon us in pieces as you think, or bring Allah and the angels face to face (with us). Or you should have a house of gold, or you should ascend into heaven, and we will not believe in your ascending until you bring to us a book which we may read.’ Say, ‘Glory be to my Lord. Am I aught but a mortal apostle?’” (17:90 - 93)

يَعْلَمُونَ ظَاهِرًا مِّنَ الْحَيَاةِ الدُّنْيَا وَهُمْ عَنِ الْآخِرَةِ هُمْ غَافِلُونَ

“They know the outward of this world’s life, but of the hereafter they are absolutely heedless.” (30:7)

(b) The Qur’an repeatedly reminds us in which we do not perceive many of the realities of the physical world through external senses:

اللَّهُ الَّذِي رَفَعَ السَّمَاوَاتِ بِغَيْرِ عَمَدٍ تَرَوْنَهَا

“Allah is He who raised the heavens without any pillars...” (13:2)

فَلَا أَقْسِمُ بِمَا تُبْصِرُونَ وَمَا لَا تُبْصِرُونَ

“But nay, I swear by which you see, and which you see not.” (69:38 - 39)

سُبْحَانَ الَّذِي خَلَقَ الْأَزْوَاجَ كُلَّهَا مِمَّا تُنْبِتُ الْأَرْضُ وَمِمَّا لَا يَعْلَمُونَ

“Glory be to Him who created pairs of all things of what the earth grows, and of their kind and of what they do not know.” (36:36)

And we also learn from the Qur’an in which only Allah is aware of the mysteries in the heavens and the earth, and those to whom Allah has granted the bliss:

وَلِلَّهِ غَيْبُ السَّمَاوَاتِ وَالْأَرْضِ وَإِلَيْهِ يُرْجَعُ الْأَمْرُ كُلُّهُ

“And Allah is the unseen in the heavens and the earth and to Him is returned the whole of the affair.” (11:23)

قُلِ اللَّهُ أَعْلَمُ بِمَا لَبِثُوا لَهُ غَيْبُ السَّمَاوَاتِ وَالْأَرْضِ

“Say, ‘Allah knows best how long they remained. To Him are (known) the unseen things of the heavens and the earth. (18:26)

إِنَّ اللَّهَ يَعْلَمُ غَيْبُ السَّمَاوَاتِ وَالْأَرْضِ ۗ وَاللَّهُ بَصِيرٌ بِمَا تَعْمَلُونَ

“Surely Allah knows the unseen things of the heavens and the earth, and Allah sees what you do.” (49:18)

عَالِمُ الْغَيْبِ فَلَا يُظْهِرُ عَلَىٰ غَيْبِهِ أَحَدًا إِلَّا مَنِ ارْتَضَىٰ مِن رَّسُولٍ فَإِنَّهُ يَسْأَلُكُم مِّن بَيْنِ يَدَيْهِ
وَمَن خَلْفَهُ رِصْدًا

“The knower of the unseen. So he does not reveal His secrets to any except to him who He regards as an apostle.” (72:26 - 27)

Unfortunately, in recent centuries, some Muslim scholars have wrongly propounded the view which experiments are the only means to acquire knowledge, and the experimental study of the book of nature suffices to know God.¹⁴

We, too, agree in which experiment and observation are indispensable tools to understand nature. We even believe the Muslims’ work in this field has been quite inadequate. But we also believe our understanding of nature

is not purely a matter of the senses. Besides, our observations and experiments cannot be the source of any knowledge unless they are channelized via the intellectual principles.

In the matter of scientific cognition of God, we are of the same opinion which martyred Professor Murtada Mutahhari expressed, “The boundary of experiment is only the cognition of the works of God, but the cognition of God through the works known by experiment is a kind of pure intellectual deduction.”¹⁵

“The ideal aim before the mind of the physicist is to understand the external world of reality. But the means which he uses to attain this end are what are known in physical science as “measurements,” and these give no direct information about external reality. They are only a register or representation of reactions to physical phenomena. As such they contain no explicit information and have to be interpreted. As Helmholtz said, measurements furnish the physicist with a sign which he must interpret, just as a language expert interprets the text of some pre-historic document which belongs to a culture utterly unknown.

The first thing which the language expert assumes - and must assume if his work is to have any practical meaning - is the document in question contains some reasonable message which has been stated according to some system of grammatical rules or symbols. In the same way the physicist must assume the physical universe is governed by some system of laws which can be understood, even though he cannot hold out himself the prospect of being able to understand them in a comprehensive way or to discover their character and manner of operation with anything like a full degree of certitude.

“Taking it, then, the external world of reality is governed by a system of laws, the physicist now constructs a synthesis of concepts and theorems, and this synthesis is called the scientific picture of the physical universe. It is a representation of the real world itself in so far as it corresponds as closely as possible to the information which the research measurements have supplied. Once he has accomplished this, the researcher can assert, without having to fear the contradiction of facts, he has discovered one side of the outer of reality, though, of course, he can never logically demonstrate the truth of the assertion.”

In a lecture, delivered by Einstein at Oxford University in 1933, under the title of “On Methods of Theoretical Physics,” he said,¹⁶ “Newton, the first creator of a comprehensive, a workable system of theoretical physics, still believed in which the basic concepts and laws of his system could be derived from experience. This is no doubt the meaning of his saying, ‘hypotheses non fingo.’

“Actually, the concepts of time and space appeared at this time to present no difficulties. The concepts of mass, inertia, and force, and the laws connecting them, seemed to be drawn directly from experience. Once this basis is accepted, the expression for the force of gravitation appears derivable from experience, and it was reasonable to expect the same in regard to other forces.

“We can indeed see from Newton’s formulation of it in which the concept of absolute space, which comprised of absolute rest, made him feel uncomfortable; he realized there seemed to be nothing in experience corresponding to this last concept. he was also not quite comfortable about the introduction of forces operating at a distance. but the tremendous partial success of his doctrines may well have prevented him and the physicists of the 18th and 19th centuries from recognizing the fictitious character of the foundations of his system.

“The natural philosophers of those days were, on the contrary, most of them possessed with the idea in which the fundamental concepts and postulates of physics were not in the logical sense, free inventions of the human mind, but could be deduced from experience by ‘abstraction’ - which is to say, by logical means. A clear recognition of the erroneousness of this notion really only came with the general theory of relativity, which showed one could take account of wider range of empirical facts, and this, too, in a more satisfactory and complete manner, on a foundation quite different from the Newtonian.

“But quite apart from the question of the superiority of one or the other, the fictitious character of fundamental principles is perfectly evident from the fact which we can point to two essentially different principles, both of which correspond with experience to a large extent; this proves, at the same time, every attempt at a logical deduction of the basic concepts and postulates of mechanics from elementary experiences is doomed to failure.

“If, then, it is true in the axiomatic basis of theoretical physics cannot be extracted from experience but must be freely invented, can we ever hope to find the right way? Nay, more, has this right way any existence outside our illusions? Can we hope to be guided safely by experience at all when there exist theories (such as classical mechanics) which to large extent do justice to experience, without getting to the root of the matter? I answer without hesitation in which there is, in my opinion, a right way, and we are capable of finding it. Our experience hitherto justifies us in believing in which nature is the realization of the simplest conceivable mathematical ideas.

“I am convinced we can discover by means of purely mathematical constructions, the concepts and the laws connecting them with each other, which furnish the key to the understanding of natural phenomena. Experience may suggest the appropriate mathematical concepts, but they most certainly cannot be deduced from it. Experience remains, of course, the sole criterion of the physical utility of a mathematical construction. But the creative principle resides in mathematics. In a certain sense, therefore, I hold it true in which pure thought can grasp reality, as the ancients dreamed.”

In his book “Physics and Beyond,” Heisenberg writes¹⁷ in the year 1926 he was of the opinion Einstein still believed in the positivistic view of Mach, which is, he believed only observable quantities should be included in physical theories. Therefore, Einstein said, “but you do not seriously believe any but observable magnitudes must go into a physical theory?”. Heisenberg asked in some surprise, “Isn’t this precisely what you have done with relativity? ... After all, you did stress the fact in which it is impermissible to speak of absolute time, simply because absolute time

cannot be observed, in which clock readings, be it in the moving reference system or the system at rest, and are relevant to the determination of time.”

Einstein then admitted, “Possibly I did use this kind of reasoning but it is non-sense all the same. Perhaps I could put it more diplomatically by saying it may be heuristically useful to keep in mind what one has actually observed. But, in principle, it is quite wrong to try founding a theory on observable magnitudes alone. In reality the very opposite happens. It is the theory which decides what we can observe.”

Phillip Frank in his biography of Einstein says¹⁸ in which he once told Einstein in which he himself had introduced the positivistic views into physics. Einstein answered, “A good joke should not be repeated too often.”

Our purpose in citing these quotations is to point out in which many of the recent outstanding research scholars have been fully aware of the inadequacy of experiments for the interpretation of nature. Otherwise, we do not doubt the importance and indispensability of experiments and Muslim researchers should not forget the message carried in such verses:

قُلْ سِيرُوا فِي الْأَرْضِ فَانظُرُوا كَيْفَ بَدَأَ الْخَلْقَ

Say, “Travel in the earth and see how He made the first creation...”
(29:20)

قُلْ انظُرُوا مَاذَا فِي السَّمَاوَاتِ وَالْأَرْضِ

Say, “Consider what is it in which is in the heavens and the earth...”
(10:101)

We should also bear in mind while the Qur’an invites us to experimental study of nature, it also points out the importance of meditation and reasoning, and teaches us not to be satisfied with mere sensory experience, but by observing what is beyond the observable part of nature, we move closer to the Creator of nature.

The Role of Revelation and Inspiration in Understanding Nature

It is deduced from some verses in the Qur’an in which the true teacher of all sciences is the Omniscient:

اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ عِلْمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ... لَّذِي عَلَّمَ بِالْقَلَمِ

Read in the Name of your Lord who created...who taught (to write) with pen. taught man what he knew not. (96:1 - 5)

خَلَقَ الْإِنْسَانَ عَلَّمَهُ الْبَيَانَ

He created man and taught him to talk. (55:2 - 3)

وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا

And taught Adam all the Names... (2:31)

The least we can infer from these verses is God has endowed people with talent to acquire knowledge and has given him the necessary means. But some Muslim philosophers believe the role of observations in the perception of a priori knowledge and the role of preliminary matters in the perception of theoretical subjects is to prepare a person’s soul to fully benefit from the spiritual world.¹⁹

In fact, the main source of the inspiration in the matter of knowledge for human beings is the Omniscient Donor of knowledge, Allah. But the degree of relation between human beings and this Source differs from person to person. Some think and get nowhere, whereas some others find some truth through meditation, and yet there are some others who become aware of many realities with only little speculation.

Some Qur'anic verses indicate besides ordinary channels of observation, meditation and intellection, there is a more direct way of attaining the knowledge of the realities of the world through the Donor of knowledge, but this way is not a general one and only the select believers pass through it. These verses may be divided into several categories:

1. It is stated in some verses in which God reveals special knowledge to certain select believers:

وَقَتَلَ دَاوُودُ جَالُوتَ وَأَتَاهُ اللَّهُ الْمُلْكَ وَالْحِكْمَةَ وَعَلَّمَهُ مِمَّا يَشَاءُ

And Dawud slew Jalut, and God gave him kingdom and wisdom and taught him of what he pleased. (2:251)

رَبِّ قَدْ آتَيْتَنِي مِنَ الْمُلْكِ وَعَلَّمْتَنِي مِنْ تَأْوِيلِ الْأَحَادِيثِ

“My Lord, You have given of the kingdom and taught me of the interpretation of sayings...” (12:101)

فَوَجَدَا عَبْدًا مِنْ عِبَادِنَا آتَيْنَاهُ رَحْمَةً مِنْ عِنْدِنَا وَعَلَّمْنَاهُ مِنْ لَدُنَّا عِلْمًا

Then they found one from among Our servants whom We had granted mercy from Us and whom We had taught knowledge from ourselves. (18:65)

إِذْ قَالَ اللَّهُ يَا عِيسَى ابْنَ مَرْيَمَ كَاهِنًا

وَإِذْ عَلَّمْنَاكَ الْكِتَابَ وَالْحِكْمَةَ وَالتَّوْرَةَ

وَالْإِنْجِيلَ

When God will say, “Oh Isa (Jesus Christ) son of Mariam (Mary). Remember My favour on you and on your mother, when I strengthened you with the Holy spirits, you spoke to the people in the cradle and when of old age, and when i taught you the Book and Wisdom and the Tawrah (Torah) and the Injil (Bible).” (5:110)

وَإِنَّهُ لَدُو عِلْمٍ لِمَا عَلَّمْنَاهُ وَلَكِنَّ أَكْثَرَ النَّاسِ لَا يَعْلَمُونَ

“And surely he was possessed of knowledge because We had given him knowledge, but most people do not know.” (12:68)

وَدَاوُودَ وَسُلَيْمَانَ إِذْ يَخْتَصِمَانِ فِي الْحَرْثِ فَقَفَّهَمْنَاهَا سُلَيْمَانَ ۖ وَكَلَّا آتَيْنَا حُكْمًا وَعِلْمًا ۖ وَسَخَّرْنَا

مَعَ دَاوُودَ الْجِبَالَ يُسَبِّحْنَ وَالطَّيْرَ ۖ وَكُنَّا فَاعِلِينَ وَعَلَّمْنَاهُ صَنْعَةَ لَبُوسٍ لَكُمْ لِتُحْصِنَكُمْ مِنْ

بَأْسِكُمْ ۗ فَهَلْ أَنْتُمْ شَاكِرُونَ

“And Dawud (David) and Sulaiman (Solomon) when they gave judgement concerning the field when the people’s sheep pastured therein by night, and we were bearer of witness to their judgment. So we made Sulaiman to understand it, and to each one We gave wisdom and

knowledge, and We made the mountains, and the birds celebrate Our praise with Dawood, and We were the doers. And We taught him the making of coats of mail for you, so they might protect your in your wars; will you then be grateful?” (21:78 - 80)

In some of the verses, the idea which this way of teaching can be accomplished through human teachers has been rejected:

إِنَّ هُوَ إِلَّا وَحْيِي يُوحَىٰ عَلَّمَهُ شَدِيدُ الْقُوَىٰ

“It is naught but revelation which is revealed. The Lord of Mighty Power has taught him” (53:4 - 5)

وَلَقَدْ نَعْلَمُ أَنَّهُمْ يَقُولُونَ إِنَّمَا يُعَلِّمُهُ بَشَرٌ

“And certainly We know what they say, ‘Only a mortal teaches him.’” (16:103)

وَأَنْزَلَ اللَّهُ عَلَيْكَ الْكِتَابَ وَالْحِكْمَةَ وَعَلَّمَكَ مَا لَمْ تَكُن تَعْلَمُ

“And God has revealed to you the Book and the wisdom, and He has taught you what you did not know.” (4:113)

ذَلِكَ بِمَا أَوْحَىٰ إِلَيْكَ رَبُّكَ مِنَ الْحِكْمَةِ

“This is of what your Lord has revealed to you of wisdom.” (17:39)

فَأَوْحَىٰ إِلَىٰ عَبْدِهِ مَا أَوْحَىٰ مَا كَذَبَ الْفُؤَادُ مَا رَأَىٰ

“And He revealed to His servant what He revealed. His heart lies not of what he saw.” (53:10 - 11)

إِنَّا أَوْحَيْنَا إِلَيْكَ كَمَا أَوْحَيْنَا إِلَىٰ نُوحٍ وَالنَّبِيِّينَ مِنْ بَعْدِهِ ۚ وَأَوْحَيْنَا إِلَىٰ إِبْرَاهِيمَ وَإِسْمَاعِيلَ

وَإِسْحَاقَ وَيَعْقُوبَ وَالْأَسْبَاطِ وَعِيسَىٰ وَأَيُّوبَ وَيُونُسَ وَهَارُونَ وَسُلَيْمَانَ ۚ وَآتَيْنَا دَاوُدَ زَبُورًا

“Surely We have revealed to you as We revealed to Nuh (Noah), and the prophets after him, and We revealed to Ibrahim (Abraham) and Ismai’il (Ismael) and Ishaq (Isaac) and Yaqub (Jacob) and the tribes of ‘Isa (Jesus Christ) and Ayyub (Job) and Yunus (Jonah) and Harun (Aaron) and Sulayman (Solomon) and We give to Dawud (David) psalms.” (4:163)

وَأَوْحَيْنَا إِلَىٰ مُوسَىٰ أَنْ أَلْقِ عَصَاكَ ۚ فَإِذَا هِيَ تَلْقَفُ مَا يَأْفِكُونَ

“And We revealed to Musa (Moses) saying, ‘Cast your rod, then lo, it devoured the lies they told.’” (7:117)

أَكَانَ لِلنَّاسِ عَجَبًا أَنْ أَوْحَيْنَا إِلَىٰ رَجُلٍ مِنْهُمْ أَنْ أَنْذِرِ النَّاسَ

“What! Is it a wonder to the people in which We revealed to a man from among themselves, say, ‘Warn the people...?’” (10:2)

وَأَوْحَيْنَا إِلَىٰ مُوسَىٰ وَأَخِيهِ أَنْ تَبَوَّأْ لِقَوْمِكَ مِمَّا يَبْصُرُ بَيْوتًا

“And We revealed to Musa and his brother, saying, ‘Take for your people houses to abide in.’” (10:87)

فَأَوْحَيْنَا إِلَيْهِ أَنْ اصْنَعْ الْفُلْكَ

“So We revealed to him saying, ‘Make the Ark before...’” (23:27)

ذَلِكَ مِنْ أَنْبَاءِ الْغَيْبِ نُوحِيهِ إِلَيْكَ

“This is of the announcements relating to the unseen which We reveal to you.” (3:44)

وَمَا أَرْسَلْنَا مِنْ قَبْلِكَ إِلَّا رِجَالًا نُوحِي إِلَيْهِمْ

“And We did not send before you any but men to whom We sent revelation.” (16:43)

قُلْ إِنَّمَا أَنَا بَشَرٌ مِثْلُكُمْ يُوحَىٰ إِلَيَّ

“Say, ‘I am only a mortal like you, it is revealed to me...’” (18:110)

3. Yet another group of verses indicates the possibility of revelation for people other than prophets:

وَإِذْ أَوْحَيْتُ إِلَى الْحَوَارِيِّينَ أَنْ آمِنُوا بِي وَبِرَسُولِي قَالُوا آمَنَّا وَاشْهَدْ بِأَنَّا مُسْلِمُونَ

“And when I revealed to the disciples, saying, ‘Believe in Me and My apostle,’ they said, ‘We believe and bear witness in which we submit (ourselves).’” (5:111)

وَأَوْحَيْنَا إِلَىٰ أُمِّ مُوسَىٰ أَنْ أَرْضِعِيهِ

“And we revealed to Musa’s Mother, saying, ‘Give him suck.’” (28:7)

In this case, “revelation” is interpreted²⁰ as “inspiration.” Of course, the revelation has been used in other senses as well.²¹

What we may conclude from these verses is the possibility of learning from the Donor of knowledge through a channel different from the common channel of observation and thinking. This, too, has different levels: The highest level of revelation is reserved for prophets only, and according to the glorious verse:

وَمَا كَانَ لِنَشْرِ أَنْ يُكَلِّمَهُ اللَّهُ إِلَّا وَحْيًا أَوْ مِنْ وَرَاءِ حِجَابٍ أَوْ يُرْسِلَ رَسُولًا فَيُوحِيَ بِإِذْنِهِ

مَا يَشَاءُ

“And it is not for any mortal which God should speak to him except by revelation or from behind a veil, or by sending a messenger and revealing by His permission what He pleases...” (42:51)

It is done through a direct inducement of the meaning in the prophet’s heart, or by the creation of words or by sending an angel messenger to him.²² On the lower levels this is done through inspiration, which is variously termed as Kashf ilham.

Muslim philosophers believe the people having talent for attaining such immediate knowledge are those who are endowed with a saintly faculty. To explain their reasoning we take a look back, and see one of the channels to cognition is (logical) thinking. In thinking, the mind undergoes a two-stage movement, and shuttles between the known and the unknown. In thinking one seeks a middle term which is common in both the given propositions with the help of which he hopes to understand the unknown. In general, finding the middle term requires certain premises.

Yet, in certain special cases some people may reach the middle minds.²³ This mental talent which takes one to the goal without following logical steps is called “intuition” and in its highest form has been called “the saintly

faculty.” A person having this gift can know many realities without the use of his sensory and rational faculties. Avicenna in his “al-Isharat” says²⁴ the following Qur’anic phrase refers to this special mental faculty:

يَكَادُ زَيْتُهَا يُضِيءُ وَلَوْ أَمْ تَمَسَّهُ نَارٌ

“The oil where of almost gives light though fire touches it not...”
(24:35)

And he confirms its existence in the following statements:²⁵

“You may wish to have more evidence to prove the existence of the saintly faculty gift. So hark! Do you not know in which “intuition” exists, and people possess different levels of reflection and intuition. Some are so dull and stupid they find no way to their goal, some others are moderately intelligent and can make use of their reasoning power and some others, more intelligent, can perceive intelligible through intuition. This intelligence differs from person to person, at the highest level, one does not need to learn (through regular course) or think through logical categories (for knowing the reality)

Now we are in a position to say in the same way in which revelation has various degrees, as stated by the following verse:

تِلْكَ الرُّسُلُ فَضَّلْنَا بَعْضَهُمْ عَلَى بَعْضٍ مِّنْهُمْ مَّنْ كَلَّمَ اللَّهُ وَرَفَعَ بَعْضَهُمْ دَرَجَاتٍ ۗ وَآتَيْنَا

عِيسَى ابْنَ مَرْيَمَ الْبَيِّنَاتِ وَأَيَّدْنَاهُ بِرُوحِ الْقُدُسِ

“We have made some of these apostles to excel the others, among them are they to whom God spoke, and some of them He exalted by (many) degrees of rank, and We gave clear miracles to Isa (Jesus) son of Maryam (Mary), and strengthened him with the Holy Spirit.” (2:253)

“Inspiration, too, is of different levels - though on the whole it is lower than revelation. Some people enjoy this gift at its highest level and others possess it in its weaker forms. For the former, realities are made manifest without effort of reflection, while the latter attain new knowledge through their own endeavours. Some of the contemporary scholars have accepted the existence of this power. Dr. Alexis Carrel in his book “Man, the Unknown” says:²⁶

“Obviously, great discoveries are not the product of intelligence alone. Men of genius, in addition to their powers of observation and comprehension, possess other qualities, such as intuition and creative imagination. Through intuition they learn things ignored by other men; they perceive relations between seemingly isolated phenomena. They unconsciously feel the presence of the unknown treasure. All great men are endowed with intuition. They know, without analysis, without reasoning, what is important for them to know. A true leader of men does not need psychological tests, or reference cards, when choosing his sub-ordinates. A good judge, without going into the details of legal arguments, and even, according to Cardozo, starting from erroneous premises, is capable of rendering a just sentence. A great scientist instinctively takes the path leading to a discovery. This phenomenon, in former times, was called inspiration.

“Men of science belong to two different types - the logical and the intuitive. Science owes its progress to both forms of mind. Mathematics, although a purely logical structure, nevertheless, makes use of intuition. Among the mathematicians there are intuitive and logicians, analysts and geometricians. Hermitte and Weierstrass were intuitive, Reimann and Bertrand, logicians. The discoveries of intuition have always to be developed by logic. In ordinary life, as in science, intuition is a powerful but dangerous means of acquiring knowledge. Sometimes it can hardly be distinguished from illusion. Those who rely upon it entirely are liable to mistakes. It is far from being always trustworthy.

“But the great man, or the simple whose heart is pure, can be led by it to the summits of mental and spiritual life. It is a strange quality. to apprehend reality without the help of intelligence appears inexplicable. One of the aspects of intuition resembles a very rapid deduction from an instantaneous observation. The knowledge which great physicians sometimes possess concerning the present and the future state of their patients is of such a nature. A similar phenomenon occurs when one appraises in a flash a man’s value, or senses his virtues and his vices. But under another aspect, intuition takes place quite independently of observation and reasoning. We may be led by it to our goal when we do not know how to attain this goal and even where it is located. This mode of knowledge is closely analogous to clairvoyance, to the sixth sense of Charles Richet.”

Finally, I would like to mention though inspiration and enlightenment are means to attain knowledge, not everybody receives this gift of light:

ذَلِكَ فَضْلُ اللَّهِ يُؤْتِيهِ مَنْ يَشَاءُ

“This is God’s grace, He grants it to whom He pleases.” (62:4)

The only way which is open to everyone is the channel of observation and reflection while aiming at attaining the knowledge of reflection while aiming at attaining the knowledge of nature. The conditions leading to proper result shall be discussed in part of our discourse.

Stages in Understanding Nature

We have already seen from the viewpoint of the Qur’an man has the capacity to understand nature.

With the use of external senses and intellect, human beings should get closer to God through understanding Divine signs. Here we have to mention wherever there is a reference in the Qur’an to the Divine evidences in the physical world, Allah attributes the ability of understanding them to special groups of people. Here are a few examples:

On Mediators

هُوَ الَّذِي أَنْزَلَ مِنَ السَّمَاءِ مَاءً لَكُمْ مِنْهُ شَرَابٌ وَمِنْهُ شَجَرٌ فِيهِ تُسِيمُونَ يُنْبِتُ لَكُمْ بِهِ الزَّرْعَ وَالزَّيْتُونَ وَالنَّخِيلَ وَالْأَعْنَابَ وَمِنْ كُلِّ الثَّمَرَاتِ إِنَّ فِي ذَلِكَ لَآيَةً لِقَوْمٍ يَتَفَكَّرُونَ

“He it is who sends down water from the cloud for you, it gives drink and by it (grows) the trees upon which you pasture. He causes to grow for you thereby herbage, and the olive, and the palm tree, and the grapes, and

of all the fruits, most surely there is a sign in this for a people who reflect.” (16:10 - 11)

وَسَخَّرَ لَكُم مَّا فِي السَّمَاوَاتِ وَمَا فِي الْأَرْضِ جَمِيعًا مِنْهُ ۗ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ يَتَفَكَّرُونَ

“And He has made sub-servient to you whatsoever is in the heavens and whatsoever is in the earth, all, from himself, most surely there are signs in this for a people who reflect.” (45:13)

On the Wise

إِنَّ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ وَالْفُلْكِ الَّتِي تَجْرِي فِي الْبَحْرِ بِمَا يَنْفَعُ النَّاسَ وَمَا أَنْزَلَ اللَّهُ مِنَ السَّمَاءِ مِنْ مَّاءٍ فَأَحْيَا بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا وَبَثَّ فِيهَا مِنْ كُلِّ دَابَّةٍ وَتَصْرِيفِ الرِّيَّاحِ وَالسَّحَابِ الْمُسَخَّرِ بَيْنَ السَّمَاءِ وَالْأَرْضِ لَآيَاتٍ لِّقَوْمٍ يَعْقِلُونَ

“Most surely, in the creation of the heavens and the earth, the alternation of the night and the day,, and the ships which run in the sea and which profits men, and the water which Allah sends down from the cloud, then gives life with it to the earth after its death and spreads in all (kinds of) animals, and the changing of the winds and the clouds made sub-servient between the heaven and the earth, there are signs for a people who ponder.” (2:264)

وَسَخَّرَ لَكُم اللَّيْلَ وَالنَّهَارَ وَالشَّمْسَ وَالْقَمَرَ ۗ وَالنُّجُومَ مُسَخَّرَاتٌ بِأَمْرِهِ ۗ إِنَّ فِي ذَلِكَ لَآيَاتٍ

لِّقَوْمٍ يَعْقِلُونَ

“And He has made sub-servient for you the night and the day and the moon, and the stars are made sub-servient by His commandment, most surely, there are signs in this for a people who ponder.” (16:12)

On People who Understand

إِنَّ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ لَآيَاتٍ لِأُولِي الْأَلْبَابِ

“Most surely in the creation of the heavens and the earth and the alternation of the night and the day there are signs for men who understand.” (3:189)

أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنَابِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ زَرْعًا مُخْتَلِفًا أَلْوَانُهُ

ثُمَّ يَهَيِّجُ فَتَرَاهُ مُصْفَرًّا ثُمَّ يَجْعَلُهُ حُطَامًا ۗ إِنَّ فِي ذَلِكَ لَذِكْرًا لِأُولِي الْأَلْبَابِ

“Do you not see Allah sends down water from the cloud, then makes it go along in the earth in springs, then brings forth therewith herbage of various colours, then it withers so you see it becoming yellow, then makes it a thing crushed and broken into pieces? Most surely there is a reminder in this for the men of understanding.” (39:21)

On the Believers

إِنَّ فِي السَّمَاوَاتِ وَالْأَرْضِ لَآيَاتٍ لِّلْمُؤْمِنِينَ

“Most surely in the heavens and the earth there are some signs for the believers.” (45:3)

أَلَمْ يَرَوْا أَنَّا جَعَلْنَا اللَّيْلَ لَيْسَكُنُوا فِيهِ وَالنَّهَارَ مُبْصِرًا ۗ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ يُؤْمِنُونَ

“Do they not consider we have made the night in which they may rest therein, and the day to give light? Most surely there are signs for a people who believe.” (72:86)

On the Pious

إِنَّ فِي اخْتِلَافِ اللَّيْلِ وَالنَّهَارِ وَمَا خَلَقَ اللَّهُ فِي السَّمَاوَاتِ وَالْأَرْضِ لآيَاتٍ لِّقَوْمٍ يَتَّقُونَ

“Most surely in the variation of the night and the day, and what Allah has created in the heavens and the earth, there are signs for a people who guard (against) evil.” (10:6)

وَإِذْ أَخَذْنَا مِيثَاقَكُمْ وَرَفَعْنَا فَوْقَكُمُ الطُّورَ خُذُوا مَا آتَيْنَاكُمْ بِقُوَّةٍ وَاذْكُرُوا مَا فِيهِ لَعَلَّكُمْ

تَتَّقُونَ

“Take hold of the law We have given you with firmness and bear in mind what is in it, so you may guard (against) evil.” (2:63)

وَمِنْ آيَاتِهِ خَلْقُ السَّمَاوَاتِ وَالْأَرْضِ وَاخْتِلَافُ أَلْوَانِكُمْ ۗ إِنَّ فِي ذَلِكَ لآيَاتٍ

لِّلْعَالَمِينَ

“And one of His signs is the creation of the heavens and the earth and the diversity of your thanks and colours; most surely, there are signs in this for the learned.” (30:22)

هُوَ الَّذِي جَعَلَ الشَّمْسَ ضِيَاءً وَالْقَمَرَ نُورًا وَقَدَرَهُ مَنَازِلَ لِتَعْلَمُوا عَدَدَ السِّنِينَ وَالْحِسَابَ ۗ مَا

خَلَقَ اللَّهُ ذَلِكَ إِلَّا بِالْحَقِّ ۗ يُفَصِّلُ الْآيَاتِ لِقَوْمٍ يَعْلَمُونَ

“He it is who made the sun a shining brightness and the moon a light, and ordained for it mansions in which you might know the computation of years and the reckoning. Allah did not create it but in truth; He makes the signs manifest for a people who know.” (10:5)

On the Mindful

وَمَا ذَرَأَ لَكُمْ فِي الْأَرْضِ مُخْتَلِفًا أَلْوَانُهُ ۗ إِنَّ فِي ذَلِكَ لآيَةً لِّقَوْمٍ يَتَذَكَّرُونَ

“And what he has created in the earth of varied hues; most surely there is a sign in this for a people who are mindful.” (16:13)

وَمِنْ كُلِّ شَيْءٍ خَلَقْنَا زَوْجَيْنِ لَعَلَّكُمْ تَتَذَكَّرُونَ

“And of everything We have created pairs in which you may be mindful.” (51:49)

On Those who Listen to Truth of God’s Word

وَمِنْ آيَاتِهِ مَنَامُكُمْ بِاللَّيْلِ وَالنَّهَارِ وَابْتِعَاؤُكُمْ مِنْ فَضْلِهِ ۗ إِنَّ فِي ذَلِكَ لآيَاتٍ لِّقَوْمٍ يَسْمَعُونَ

“And one of His signs is your sleeping and your seeking of His Grace by night and (by) day; most surely, there are signs in this for a people who would hear.” (30:23)

وَاللَّهُ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَحْيَا بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا ۗ إِنَّ فِي ذَلِكَ لآيَةً لِّقَوْمٍ يَسْمَعُونَ

“And Allah has sent down water from the cloud and therewith given life to the earth after its death; most surely there is a sign in this for a people who would listen.” (16:65)

On the people who are sure

وَفِي خَلْقِكُمْ وَمَا يَبُتُّ مِنْ دَابَّةٍ آيَاتٍ لِقَوْمٍ يُوقِنُونَ

“And in your (own) creation and in what He spreads abroad of animals there of animals there are signs for a people which are sure.” 45:4

وَفِي الْأَرْضِ آيَاتٌ لِلْمُوقِنِينَ ۖ أَنْفُسِكُمْ أَفَلَا تُبْصِرُونَ

“And in the earth there are signs for those who are sure, and in your souls (too), will you not then see?” (51:20 - 21)

On those who examine truth, have insight, and understand

وَهُوَ الَّذِي أَنْشَأَكُمْ مِنْ نَفْسٍ وَاحِدَةٍ فَمُسْتَقَرٌّ وَمُسْتَوْدَعٌ ۗ قَدْ فَصَّلْنَا الْآيَاتِ لِقَوْمٍ يَفْقَهُونَ

“And he it is who has brought you into being from a single soul, then there is (for you) a resting place and a depository; indeed We have made plain the communications for a people who understand.” (6:98)

فَأَخَذَتْهُمُ الصَّيْحَةُ مُشْرِقِينَ ۖ فَجَعَلْنَا عَالِيَهَا سَافِلَهَا وَأَمْطَرْنَا عَلَيْهِمْ حِجَابًا ۖ أَلَمْ نَكُنْ فِي

ذَلِكَ لآيَاتٍ لِلْمُتَوَسِّمِينَ

“So the rumbling overtook them (while) entering upon the time of sunrise. Thus did we turn it upside down, ad rained down upon them stones of what has been decreed. Surely in this are signs for those who examine.” (15:73 - 75)

كُلُوا وَارْعَوْا أَنْعَامَكُمْ ۗ إِنَّ فِي ذَلِكَ لآيَاتٍ لِأُولِي النُّهَى

“Eat and pasture your cattle; most surely there are signs in this for those endowed with understanding.” (20:54)

What we understand from the words “Tafakkur, Taaqqul, Tafaqquh, etc.” used in the Qur’an is they refer to different degrees of intellectual perception and some are indispensable for some others. For example, by comparing the following verses:

إِنَّ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ لآيَاتٍ لِأُولِي الْأَلْبَابِ الَّذِينَ يَذْكُرُونَ
اللَّهَ قِيَامًا وَقُعُودًا وَعَلَىٰ جُنُوبِهِمْ وَيَتَفَكَّرُونَ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَذَا
بَاطِلًا

“Most surely in the creation of the heavens and the earth and the alternation of the night and the day there are signs for men who understand. Those who remember Allah standing and sitting and being on their sides and reflect on the creation of the heavens and the earth, “Our Lord, You have not created this in vain. Glory be to You, save us then from the chastisement of the fire.” (3:190 - 191)

إِنَّ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ لآيَاتٍ لِقَوْمٍ يَعْقِلُونَ ۖ

“Most surely in the creation of the heavens and the earth and the alternation of the night and the day...there are signs for a people who understand.” (2:164)

إِنَّ فِي اخْتِلَافِ اللَّيْلِ وَالنَّهَارِ وَمَا خَلَقَ اللَّهُ فِي السَّمَاوَاتِ وَالْأَرْضِ لآيَاتٍ لِقَوْمٍ يَتَفَكَّرُونَ

“Most surely in the alternation of the night and the day, and what Allah has created in the heavens and the earth, there are signs for a people who guard (against evil).” (10:6)

وَتَرَوُوهَا فِي نَفْسِ النَّوْءِ وَالنَّهَارِ وَمَا يَخْلُقُ إِلَّا الْغَائِبُونَ
وَتَرَوُوهَا فِي نَفْسِ النَّوْءِ وَالنَّهَارِ وَمَا يَخْلُقُ إِلَّا الْغَائِبُونَ

“...and make provision, for surely the provision is the guarding of oneself, and be careful (of your duty) to Me, oh men of understanding.” (2:197)

وَتِلْكَ الْأَمْثَالُ لِنَاسٍ لِّمَنْ يَعْقِلُهَا إِلَّا الْعَالِمُونَ

“And (as for) these examples, We set them forth for the people and none understand them but the learned.” (29:43)

It may be concluded in which “Ulal-Albab” possess “reasoning faculty,” mediation, piety and knowledge. Their other characteristics are: listening and hearing the right word, ability of avoiding fallacies of illusions, worshipping God, having wisdom, being mindful and taking an example of past experiences (of ancestors). These characteristics are deducible from the following verses.

الَّذِينَ يَسْتَمِعُونَ الْقَوْلَ فَيَتَّبِعُونَ أَحْسَنَهُ ۗ أُولَٰئِكَ الَّذِينَ هَدَاهُمُ اللَّهُ ۗ وَأُولَٰئِكَ هُمْ أُولُو

الْأَلْبَابِ

“Those who listen to the word, then follow the best of it, those are they whom Allah has guided, and those it is whom are men of understanding.” (39:18)

هُوَ الَّذِي أَنْزَلَ عَلَيْكَ الْكِتَابَ مِنْهُ آيَاتٌ مُحْكَمَاتٌ هُنَّ أُمُّ الْكِتَابِ وَأُخَرُ مُتَشَابِهَاتٌ ۗ فَأَمَّا

الَّذِينَ فِي قُلُوبِهِمْ زَيْغٌ فَيَتَّبِعُونَ مَا تَشَابَهَ مِنْهُ ابْتِغَاءَ الْفِتْنَةِ وَابْتِغَاءَ تَأْوِيلِهِ ۗ وَمَا يَعْلَمُ تَأْوِيلَهُ إِلَّا

اللَّهُ ۗ وَالرَّاسِخُونَ فِي الْعِلْمِ يَقُولُونَ آمَنَّا بِهِ كُلٌّ مِنْ عِنْدِ رَبِّنَا ۗ وَمَا يَذَّكَّرُ إِلَّا أُولُو الْأَلْبَابِ

“He it is who has revealed the book to you, some of its verses are decisive, they are the basis of the Book, and others are allegorical, then as for those in whose hearts there is perversity, they follow the part of it which is all allegorical, seeking to mislead, and seeking to give it (their own) interpretation, but none knows its interpretation except Allah, and those who are firmly rooted in knowledge say, ‘We believe in it, it is all from our Lord, and none do mind except those having understanding.’” (3:7)

أَمَّنْ هُوَ قَانِتٌ آنَاءَ اللَّيْلِ سَاجِدًا وَقَائِمًا يَحْذَرُ الْآخِرَةَ وَيَرْجُو رَحْمَةَ رَبِّهِ ۗ قُلْ هَلْ يَسْتَوِي

الَّذِينَ يَعْلَمُونَ وَالَّذِينَ لَا يَعْلَمُونَ ۗ إِنَّمَا يَتَذَكَّرُ أُولُو الْأَلْبَابِ

“What! He who is obedient during hours of the night prostrating himself and standing,, takes care of the hereafter and hopes for the mercy of his Lord! Say, ‘Are those who know and those who do not know alike?’ Only the men of understanding are mindful.” (39:9)

يُؤْتِي الْحِكْمَةَ مَنْ يَشَاءُ ۗ وَمَنْ يُؤْتَ الْحِكْمَةَ فَقَدْ أُوتِيَ خَيْرًا كَثِيرًا ۗ وَمَا يَذَّكَّرُ إِلَّا أُولُو

الْأَلْبَابِ

“He grants wisdom to whom He pleases, and whoever is granted wisdom, he indeed is given a great good, and none but men of understanding mind.” (2:269)

أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنَابِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ زَرْعًا مُخْتَلِفًا أَلْوَانُهُ ثُمَّ يَهِيَجُ فَتَرَاهُ مُصْفَرًّا ثُمَّ يَجْعَلُهُ حُطَامًا ۗ إِنَّ فِي ذَلِكَ لَذِكْرًا لِأُولِي الْأَلْبَابِ

“Do you not see Allah sends down water from the cloud, then makes it go along in the earth in springs, then brings forth therewith herbage of various colours, then it withers so you see it becoming yellow, then He makes it a thing crushed and broken into pieces? Most surely there is a reminder in this for the men of understanding.” (39:21)

لَقَدْ كَانَ فِي قَصَصِهِمْ عِبْرَةٌ لِأُولِي الْأَلْبَابِ

“In their histories there is certainly a lesson for men of understanding.” (12:111)

One can see “Ulal-Albab” possess most of the characteristics mentioned in the Qur’an for understanding nature. They have purified intellects, and, therefore, have better capability for attaining a deeper knowledge of nature.

وَهُوَ الَّذِي جَعَلَ لَكُمُ النُّجُومَ لِتَهْتَدُوا بِهَا فِي ظُلُمَاتِ الْبَرِّ وَالْبَحْرِ ۗ قَدْ فَصَّلْنَا الْآيَاتِ لِقَوْمٍ يَعْلَمُونَ

“And He it is who has made the stars for you in which you might follow the right way thereby in the darkness of the land and the sea; truly we have made plain the communications for a people who know.” (6:97)

وَهُوَ الَّذِي أَنْشَأَكُمْ مِنْ نَفْسٍ وَاحِدَةٍ فَمُسْتَقَرًّا وَمُسْتَوْدَعًا ۗ قَدْ فَصَّلْنَا الْآيَاتِ لِقَوْمٍ يَفْقَهُونَ

“And He it is who has brought you into being from a single soul, then there is (for you) a resting place and a depository; indeed, we have made plain the communications for a people who understand.” (6:98)

وَهُوَ الَّذِي أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ نَبَاتَ كُلِّ شَيْءٍ فَأَخْرَجْنَا مِنْهُ خَضِرًا نُخْرِجُ مِنْهُ

حَبًّا مُتَرَاكِبًا وَمِنَ النَّخْلِ مِنْ طَلْعِهَا قِنْوَانٌ دَانِيَةٌ وَجَنَّاتٍ مِنْ أَعْنَابٍ وَالزَّيْتُونَ وَالرُّمَّانَ مُشْتَبِهًا وَغَيْرَ مُتَشَابِهٍ ۗ انظُرُوا إِلَى ثَمَرِهِ إِذَا أَثْمَرَ وَيَنْعِهِ ۗ إِنَّ فِي ذَلِكَُمْ آيَاتٍ لِقَوْمٍ يُؤْمِنُونَ

“And He it is who sends down water from the cloud, then We bring forth with its buds of all (plants), then we bring forth from it green (foliage) from which we produce grain filled up (in the ear), and the palm tree, of the sheaths of it, come forth clusters (of dates) within reach...most surely there are signs in this for a people who believe.” (6:99)

We realize (as ‘Allamah Tabatabai has mentioned²⁷) while understanding certain things related to plants is possible for unlearned believers, the understanding of astronomical problems requires scientific background, and the understanding of issues related to the human soul and its mysteries needs theoretical knowledge as well as profound understanding of human nature. The Qur’an refers to a sublime faculty of cognition which is the cognition of the “spiritual dimension” (Malakut) of the heavens and the earth:

وَكَذَلِكَ نُرِي إِبْرَاهِيمَ مَلَكُوتَ السَّمَاوَاتِ وَالْأَرْضِ وَلِيَكُونَ مِنَ الْمُوقِنِينَ

“And thus did We show Ibrahim the spiritual dimension of the heavens and the earth, and he might be of those who are sure.” (6:75)

أَوَلَمْ يَنْظُرُوا فِي مَلَكُوتِ السَّمَاوَاتِ وَالْأَرْضِ وَمَا خَلَقَ اللَّهُ مِنْ شَيْءٍ

“Do they not consider the spiritual dimension of the heavens and the earth and whatever thinks Allah has created?” (7:185)

Moreover, the first verse indicates the vision of “spiritual dimension” results in sureness. There have been various interpretations of “Malakut.” Some scholars, including “Allamah Tabataba’i,²⁸ believe it to be the innermost aspect of beings and the deepest attachment of their very existence to the Almighty God. Some meant by it wonders in the heavens and the earth,²⁹ and some others interpret it as the laws of nature.³⁰

In reference to the vision of “Malakut,” various vies have been expressed. A majority of the interpreters believe it to be a non-sensual vision or an intellectual one.³¹ Imam Fakhr al-Din Razi in his interpretation of the first verse (i.e. 6:75) says,

There are two view in connection with the “revealing”: First statement indicates God revealed the spiritual dimension to Ibrahim’s ordinary eyes... and the second indicates it was his inner and mental discernment which had this vision, not his physical eyes. These things prove the vision had been through mental discernment, not through the eyes.”

It is quite certainly a profound cognition of nature, and as it ends in certitude and sureness, therefore, it is the highest level of cognition. And to attain this kind of cognition, one requires all the qualifications mentioned in the verses quoted in this section.

Thus, we conclude

1. There are different levels of understanding a phenomenon.
2. For understanding the different natural phenomena, there are different pre-requisite conditions.
3. To have a more profound understanding of nature, researches should try to acquire the above mentioned characteristics more and more. These characteristics can be briefly summarized in the following three categories: scientific aptitude, higher (analytical) intellect, and faith with piety.

One may question the role of faith and piety in the proper understanding of nature, or can say for what reason has God denied the proper cognition to unbelievers in the following verses:

قُلْ انظُرُوا مَاذَا فِي السَّمَاوَاتِ وَالْأَرْضِ ۚ وَمَا تُعْنِي الْآيَاتُ وَالنُّذُرُ عَنْ قَوْمٍ لَا يُؤْمِنُونَ

Say, “Consider what is it which is in the heavens and the earth and signs and warners do not avail a people who would not believe.” (10:101)

أَوَلَمْ يَرَوْا إِلَى الْأَرْضِ كَيْفَ أَخْتَرْتَهُمْ

مُؤْمِنِينَ

“Do they not see the earth, how many of every noble kind We have caused to grow in it? Most surely there is a sign in this, but most of them will not believe.” (26:7 - 8)

إِنْ تُسْمِعْ إِلَّا مَنْ يُؤْمِنُ بِآيَاتِنَا فَهُمْ مُسْلِمُونَ

Nor can you lead away the blind out of their way. You cannot make to hear any but those who believe in your communications.” (30:53)

Why has God attributed the understanding of some of his signs in nature to the believers and the pious only?

إِنَّ فِي السَّمَاوَاتِ وَالْأَرْضِ لَآيَاتٍ لِّلْمُؤْمِنِينَ

“Most surely in the heavens and the earth there are some signs for the believers.” (45:3)

إِنَّ فِي اخْتِلَافِ اللَّيْلِ وَالنَّهَارِ وَمَا خَلَقَ اللَّهُ فِي السَّمَاوَاتِ وَالْأَرْضِ لَآيَاتٍ لِّقَوْمٍ يَتَّقُونَ

“Most surely in the alternation of the night and the day, and what Allah has created in the heavens and the earth, there are signs for a people who guard (against) evil.” (10:6)

Is it not true in which every person whether believer or non-believer may be capable of logical thinking? Is not the Qur’an Itself a logically arguing with unbelievers and polytheists? To answer this question we seek help from the Qur’an itself. In view of the inseparability of piety and faith:

وَاتَّقُوا اللَّهَ إِنَّ كُنْتُمْ مُؤْمِنِينَ

“And be careful of (your duty to) God if you are believers.” (5:57)

إِنْ تَتَّقُوا اللَّهَ يَجْعَلْ لَكُمْ فِرْقَانًا - الْأَنْفَالُ 29

One can point out in which the effect of faith people can differentiate between right and wrong, for their intellectual activity is free from the vices caused by devilish inducements and temptations.

As Mowlavi puts it

When the mirror of the heart is clean and stainless,
Therein you see images beyond earth and water,
You see both the Painter and the paintings,
Both the Divine carpet and the carpet spreader.

Or as Hafez puts it

The blurred eye cannot reach the face of the beloved,
Cast your look upon her when your mirror is clean,
I rinsed my eyes clean with my own tears, as the visionaries say,
First clean yourself and then look upon the clean.

In his exegesis of the Qur’an “al-Mizan,” ‘Allamah Tabataba’i says,³² “The reason why the Holy Qur’an emphasizes piety alongside reflection, intellection and remembrance, and has related knowledge with practice is it ensures the stability of thought, righteousness of knowledge and avoidance of vices of caprice and evil.”

A saying from our great Prophet (S) has been reported, which confirms it,³³

لولا أن الشياطين يحومون على قلوب بني آدم لنظروا إلى ملكون السماء

“Had the part of the devil not moved around the minds of the children of Adam, they would have seen the spiritual dimension of the sky.”

There is also a statement from Imam ‘Ali (a.s.) on the same line,³⁴

ومن لم يهذب نفسه لم ينفع بالعقل

“One who does not render his heart clean does not benefit from his intellect.”

Therefore, the important role of piety and cleanness of heart (sanctification) is to harness the slips of intellect. However, we deduct from certain Qur’anic verses and Islamic works which effect of piety is not limited to the repulsion of the impediments of cognition, but through piety and sanctification one can attain cognition above and beyond the cognition attained through experience and reasoning. In this connection, we are going to cite some relevant verses from the Qur’an:

وَاتَّقُوا اللَّهَ وَيُعَلِّمُكُمُ اللَّهُ

“...and be careful of (your duty to) Allah. Allah teaches you, and Allah knows all things.” (2:282)

وَالَّذِينَ جَاهَدُوا فِينَا لَنَهْدِيَنَّهُمْ سُبُلَنَا

“And (as for) those who strive hard for Us, We will most certainly guide them in Our ways, and Allah is most surely with the doers of good.” (29:69)

وَكَذَلِكَ نُرِي إِبْرَاهِيمَ مَلَكُوتَ السَّمَاوَاتِ وَالْأَرْضِ وَلِيَكُونَ مِنَ الْمُوقِنِينَ

“And thus did We show Ibrahim the spiritual dimension (Malakut) of the heavens and the earth and he might be of those who are sure.” (6:75)

A Tradition of the Prophet (S), which is universally accepted and respected by all Muslims, says,³⁵

قال رسول الله (ص): قال الله عز وجل...وما تقرب إلى عبد بشيء أحب إلي مما افترضت عليه وأنه ليتقرب إلي بالنافلة حتى أحبه فإذا أحبته كنت سمعه الذي يسمع به وبصره الذي يبصر به ولسانه الذي ينطق به ويده التي يبطش بها ، إن دعاني أحبته وإن سألتني أعطيته

“No servant has sought My proximity through what is more favourite to Me than performing his duties, but through praise-worthy acts a servant gets so close to me I love him. It is then I become an ear for him by means of which he hears, an eye from him by means of which he sees, a tongue for him by means of which he speaks and a hand with which he grasps. Should he call Me, I respond to him, and should he request something, I bestow upon him.”

It has also been reported in which our great Prophet (S) had said,³⁶

وما أخلص عبد الله عز وجل أربعين صباحا إلا جرت ينابيع الحكمة من قلبه على لسانه

“No servant devotes his full forty mornings to (the service of) God except when the springs of wisdom flow from his heart to his tongue.

And it is reported from Imam ‘Ali (a.s.) in Nahj al-Balaghah,³⁷

قد أجمأ عقله وأمات نفسه حتى دق حليله ولطف غليظه وبرق له لا مع كثير البرق فأبان له الطريق وسلك به السبيل ، وتدافعت الأبواب إلى باب السلامة ودار الإقامة نينت رجلاه بطمانينة بدنه في قرار الأمن والراحة ، بما استعمل قلبه ، وأرضى ربه

“He (the believer) kept his mind alive and killed (the desires of) his heart until his body became thin, his bulk turned light and effulgence of extreme brightness shone for him. It lighted the way from him and took him on the (right) path. Different doors led him to the door of safety and the place of (his permanent) stay. His feet, balancing his body, were fixed in the position of safety and comfort because he kept his heart busy (in good acts) and pleased his Allah.”

Also in Nahj al-Balaghah we find,³⁸

هجم بهم العلم على حقيقة البصيرة وباشروا روح اليقين واستلانوا ما استعوره المترفون
وانسوا بما استوحش منه الجاهلون

“Knowledge has led them to real understanding and so they have associated themselves with the spirit of conviction. They take easy what the easy going regard as hard. They love what they ignorant took as strong.”

In any case, it is certain in which illumination and inspiration, as a source of knowledge is not open at all, and only those with proper background can benefit from it. The channel which is open to all is the employment of sensory experience and intellect, and, of course, in order to arrive at truth one should avoid the impediments in the way of cognition.

Impediments of Cognition

Sometimes, certain internal factors over-rule the intellect, and prevent it from functioning properly. Then, while the judgments are said to have been made wisely, in fact they are the product of an unhealthy intellect polluted with impurities. As Allameh Tabataba’i puts it,³⁹ “The role of intellect in such cases resembles a judge who passes an unjust verdict relying on (forged) documents or false witnesses, though he may not have intended to do so.” Therefore, a research should shake his mind of unfounded pre-judgments and suppositions, and cleanse it of immoralities in order to attain a correct understanding.

Ghazali in his “Ihya al-‘Ulum al-Din” uses an interesting simile,⁴⁰ which, in some respects casts light on this subject. He says the human heart resembles a mirror which reflects good, clear pictures when it is shined and polished. The human heart, too, gets more sheen through noble qualities and better reflects the truth and realities, but when it is affected by vicious qualities, like a dust covered mirror, it cannot depict realities. For the same reason “not hearing” has the connection with “the sealing of the heart” on account of faulty deeds as shown in the following verses of the Holy Qur’an:

لَوْ نَشَاءُ أَصَبْنَاَهُمْ بِدُنُوبِهِمْ، وَنَطْبَعُ عَلَى قُلُوبِهِمْ فَهُمْ لَا يَسْمَعُونَ

“If We please, We would afflict them on account of their faults, and set a seal on their hearts so they would not hear.” (7:100)

وَاتَّقُوا اللَّهَ وَاسْمَعُوا

“...And be careful of (your duty to) God and hear...” (5:108)

Thus, listening to, and hearing the right word is connected with piety, and not hearing it, or sealing the heart, is connected with committing sins.

Gazzali goes on with his simile and says, “For everything known there is a truth, a picture of which falls on the mirror of heart, which is the home of knowledge.”

Now, in the same way in which an ordinary mirror cannot reflect an image because of any one of the following defects:

1. imperfect components
2. opacity of the face of the mirror
3. not facing the bright side of the mirror
4. the existence of a barrier between the mirror and the objects
5. the object not being placed in front of the mirror

A human heart, which is capable of cognizing realities, may lose this capacity if affected by one of the following five causes:

1. intrinsic deficiency, as in the case of children
2. obscurity (darkness) caused by sins and lust, therefore, turning one’s face towards the Creator and turning away from passion purifies the heart and makes it glitter:

وَالَّذِينَ جَاهَدُوا فِينَا لَنَهْدِيَنَّهُمْ سُبُلَنَا

“Those who strive hard for us We will most certainly guide them in our ways...” (29:69)

3. Not paying attention to realities. A heart may be clean, but if it does not search for truth, it is not revealed to him. For instance, a man whose sole endeavour is physical worship or earning his livelihood, without any meditation on the Divine realities hidden from common people’s eyes, may get only what they are after, not more.

4. The existence of obstacles in the way of cognizing realities, i.e. veils and barriers between the heart and the object in view, due to which truth does reveal itself. Blind imitation of the ancestors and the sedimented opinions of their own are hindrances to the perception of realities.

5. Ignorance of the method of attaining the object in view. A man in search of knowledge cannot succeed to do so unless he is provided with the pre-requisites for attaining the desired reality. Therefore, ignorance of these pre-requisites and their manner of combination is an impediment in the way of attaining knowledge. For instance a man who wants to see the back of his head, but holds the mirror in front of him, cannot see what he wants; if he holds the mirror behind his head, he cannot see even the mirror, much less his back. Thus, he needs two mirrors to achieve his purpose, and the two mirrors should be set in a special position in relation to each other. In is the case with cognitions, too. For every cognition, its pre-requisites should be attained first. Ignorance creates the impediments between the heart and realities. Otherwise, the heart is intrinsically noble and capable of attaining realities (this is a brief summary of Ghazali’s views on the matter).

Now we are going to cite from the Holy Qur’an the factors which prevent a correct cognition. These factors can be classified under two or three general headings, but for the sake of clarity of the matter, we use the very headings mention in the verses of the Qur’an.

1. Lack of Faith

There are many verses in the Qur'an which indicate faithlessness as a great impediment in the way of cognition:

ذَلِكَ بِأَنَّهُمْ آمَنُوا ثُمَّ كَفَرُوا فَطُبِعَ عَلَى قُلُوبِهِمْ فَهُمْ لَا يَفْقَهُونَ

“This is because they believe, then disbelieve, so a seal is set upon their hearts so they do not understand.” (63:3)

وَمَا أَنْتَ بِهَادٍ الْعُمِّيِّ عَنْ صَلَاتِهِمْ ۚ إِنَّ تُسْمِعُ إِلَّا مَنْ يُؤْمِنُ بِآيَاتِنَا فَهُمْ مُسْلِمُونَ

“Nor can you lead away the blind out of their error. You cannot make to hear any but those who believe in Our communications so they shall submit.” (30:53)

كَذَلِكَ يَجْعَلُ اللَّهُ الرِّجْسَ عَلَى الَّذِينَ لَا يُؤْمِنُونَ

“...Thus does God lay uncleanness on those who do not believe.” (6:125)

إِنَّا جَعَلْنَا الشَّيَاطِينَ أَوْلِيَاءَ لِلَّذِينَ لَا يُؤْمِنُونَ

“Surely we have made the Shaitans to be guardians of those do not believe.” (7:27)

إِنَّ الَّذِينَ لَا يُؤْمِنُونَ بِآيَاتِ اللَّهِ لَا يَهْدِيهِمُ اللَّهُ

“As for those who do not believe in God's communications, surely God will not guide them.” (16:104)

وَالَّذِينَ لَا يُؤْمِنُونَ فِي آذَانِهِمْ وَقْرٌ وَهُوَ عَلَيْهِمْ عَمًى

“...and as for those who do not believe, there is a heaviness in their ears and it is obscure to them.” (41:44)

Some verses in the Qur'an indicate the sole reliance on knowledge, without faith, can never take one to the correct understanding of nature:

قُلْ انظُرُوا مَاذَا فِي السَّمَاوَاتِ وَالْأَرْضِ ۚ وَمَا تُعْطِي الْآيَاتُ وَالنُّذُرُ عَنْ قَوْمٍ لَا يُؤْمِنُونَ

“Say, ‘Consider what is it in which is in the heavens and the earth, and signs and warners do not avail a people who would not believe.’ (10:101)

فَاعْرِضْ عَنْ مَنْ تَوَلَّىٰ عَنْ دِكْرِنَا وَلَمْ يُرِدْ إِلَّا الْحَيَاةَ الدُّنْيَا ذَلِكِ مَبْلَغُهُمْ مِنَ الْعِلْمِ ۚ إِنَّ رَبَّكَ

هُوَ أَعْلَمُ بِمَنْ ضَلَّ عَنْ سَبِيلِهِ وَهُوَ أَعْلَمُ بِمَنْ اهْتَدَىٰ

“Therefore, turn aside from him who turns his back upon Our reminder and does not desire anything but this world's life. This is their goal of knowledge, and He knows best him who follows the right direction.” (53:29 - 30)

As previously mentioned, the principal role of faith in understanding is to restore man's faculty of intellect to its original state.

2. The existence of the factors causing intellect's deviation

A. Following one's desires, fancy and wishes

It is repeatedly mentioned in the Qur'an in which the following one's desires and wishes lead one astray:

فَإِنْ لَمْ يَسْتَجِيبُوا لَكَ فَاعْلَمْ أَنَّمَا يَتَّبِعُونَ أَهْوَاءَهُمْ ۗ وَمَنْ أَضَلُّ مِمَّنِ اتَّبَعَ هَوَاهُ بِغَيْرِ هُدًى مِنَ اللَّهِ

“But if they do now answer you, know they only follow their low desires, and who is more erring than he who follows his low desires without any guidance from God.” (28:50)

أَفَرَأَيْتَ مَنِ اتَّخَذَ إِلَهَهُ هَوَاهُ وَأَضَلَّهُ اللَّهُ عَلَىٰ عِلْمٍ وَخَتَمَ عَلَىٰ سَمْعِهِ وَقَلْبِهِ وَجَعَلَ عَلَىٰ بَصَرِهِ غِشَاوَةً فَمَنْ يَهْدِيهِ مِنْ بَعْدِ اللَّهِ ۗ أَفَلَا تَذَكَّرُونَ

“Have you then considered him who takes his low desire for his god, and Allah has made him err, having knowledge, and has set a seal upon his ears and his heart and put a covering upon his eye. Who can then guide him after Allah? Will you not then be mindful?” (45:23)

وَلَنْ اتَّبَعْتَ أَهْوَاءَهُمْ بَعْدَ الَّذِي جَاءَكَ مِنَ الْعِلْمِ ۖ مَا لَكَ مِنَ اللَّهِ مِنْ وَلِيٍّ وَلَا نَصِيرٍ

“And if you follow their desires after the knowledge has come to you, you shall have no guardian from Allah, nor any helper.” (2:120)

فَاخْكُمْ بَيْنَ النَّاسِ بِالْحَقِّ وَلَا تَتَّبِعِ الْهَوَىٰ فَيُضِلَّكَ عَنْ سَبِيلِ اللَّهِ

“...so judge between men with justice, and do not follow desires, lest it should lead you astray from the path of God.” (38:26)

وَإِنَّ كَثِيرًا لَيُضِلُّونَ بِأَهْوَائِهِمْ بِغَيْرِ عِلْمٍ

“...and most surely many would lead (people) astray by their low desires out of ignorance...” (6:119)

أُولَٰئِكَ الَّذِينَ طَبَعَ اللَّهُ عَلَىٰ قُلُوبِهِمْ وَاتَّبَعُوا أَهْوَاءَهُمْ

“And these are they upon whose hearts God has set a seal and they follow their low desires.” (47:16)

Our Great Prophet (S) has been quoted as saying,⁴¹

إن أخوف ما أخاف فيك الهوى وصل الأمر ، أما الهوى فإنه يصد عن الحق. وأما طول الأمل فبني الأخرة

“In your case, I would fear two characteristics: obedience to desires and indulgence. Obedience to desires and fancies keeps you away from finding truth, and indulgence causes to forget the Resurrection.”

And it has been reported from Imam Ali (a.s.) as saying,

الهوى عدو العقل

“Desire is the enemy of reason.”⁴²

And,

الأماني تعمي أعين البصائر

“Ambition blinds man’s insight.”⁴³

B. Blind love or hatred and unjustifiable prejudice

These, too, are the factors which prevent the intellect from impartiality and seeking truth. An Arab poet said,

وعين الرضا عن كل عيب كليلة ولكن عين السخط ندى المساويا

“A look through satisfied eyes covers all the faults, but a look of discontent uncovers all the faults.”

Or as Mowlavi puts it, “When bias comes, art is covered.”

The Holy Qur’an has repeatedly warned man against the diseases which inflict the heart:

وَأَمَّا ثَمُودُ فَهَدَيْنَاهُمْ فَاسْتَحَبُّوا الْعَمَىٰ عَلَى الْهُدَىٰ فَأَخَذَتْهُمُ صَاعِقَةُ الْعَذَابِ الْهُونِ بِمَا كَانُوا يَكْسِبُونَ

“And as to Thamud, We showed them the right way, but they chose error above guidance, so there overtook them the scourge of an abasing chastisement for what they earned.” (41:17)

وَعَادًا وَثَمُودَ وَقَدْ تَبَيَّنَ لَكُمْ مِنْ مَسَاكِينِهِمْ ۖ وَزَيْنَ لَهُمُ الشَّيْطَانُ أَعْمَاهُمْ فَصَدَّهُمْ عَنِ السَّبِيلِ وَكَانُوا مُسْتَبْصِرِينَ

“And (We destroyed) ‘Ad and Thamud and from their dwellings (this) is apparent to you indeed, and the Shaytan made their deeds fair seeming to them, so he kept them back from their path, though they were endowed with intelligence and skill.” (29:38)

وَقَالَ يَا قَوْمِ لَقَدْ أَبْلَغْتُكُمْ رِسَالَاتِ رَبِّي وَنَصَحْتُ لَكُمْ وَلَكِنْ لَا تُحِبُّونَ النَّاصِحِينَ

Then said, “Oh my people, I did certainly deliver to you the message of my Lord and I gave you good advice, but you do not love those who give good advice.” (7:79)

ذَٰلِكَ بِأَنَّهُمْ اسْتَحَبُّوا الْحَيَاةَ الدُّنْيَا عَلَى الْآخِرَةِ وَأَنَّ اللَّهَ لَا يَهْدِي الْقَوْمَ الْكَافِرِينَ وَأَلْمَنَ الَّذِينَ طَبَعَ اللَّهُ عَلَىٰ قُلُوبِهِمْ وَسَمِعِهِمْ وَأَبْصَارِهِمْ ۖ وَأُولَٰئِكَ هُمُ الْعَافِلُونَ

“This is because they have this world’s life more than the hereafter, and because Allah does not guide the unbelieving people. These are they on whose hearts and their hearing and their eyes Allah has set a seal and these are the heedless ones.” (16:101 - 108)

لَقَدْ جِئْنَاكُمْ بِالْحَقِّ وَلَكِنَّ أَكْثَرَكُمْ لِلْحَقِّ كَارِهُونَ

“Certainly we have brought you the truth but most of you are adverse to the truth.” (43:78)

ذَٰلِكَ بِأَنَّهُمْ كَرِهُوا مَا أَنْزَلَ اللَّهُ فَأَحْبَطَ أَعْمَاهُمْ

“This is because they hated what God revealed. So He rendered their deed null.” (47:9)

وَزَيْنَ ذَٰلِكَ فِي قُلُوبِكُمْ وَطَنَنْتُمْ ظَنِّ السَّوْءِ وَكُنْتُمْ قَوْمًا بُورًا

“...and this was made fair seeming to your hearts and you thought an evil thought and you were a people doomed to perish.” (48:12)

وَقَالَ نِسْوَةٌ فِي الْمَدِينَةِ امْرَأَتُ الْعَزِيزِ تُرَاوِدُ فَتَاهَا عَنْ نَفْسِهِ ۖ قَدْ شَغَفَهَا حُبًّا ۗ إِنَّا لَنَرَاهَا فِي

ضَلَالٍ مُبِينٍ

“And the women in the city said, ‘The chief’s wife seeks her slave to yield himself (to her), surely he has affected her deeply with (his) love, most surely we see her in manifest error.’” (12:30)

وَكَذَلِكَ زَيْنَ لِفِرْعَوْنَ سُوءَ عَمَلِهِ وَصَدَّ عَنِ السَّبِيلِ

“And thus the evil of his deed was made fair seeming to Pharaoh, and he was turned away from the way...” (40:37)

It has been quoted from the great Prophet (S),⁴⁴

حبك للشي يعمي ويصم

“Loving something makes you blind an deaf (in relation to it).”

And it has been quoted from ‘Ali (a.s.),

ومن عشق شيئا اغشى بصره وأمراض قلبه فهو ينظر بعين غير صحيحة ويسمع بأذن غير

سميعة

“A lover is blind and sick at heart, so he faces the truth with unhealthy sight and a deaf ear.”⁴⁵ And, “Heart turns blind to what it dislikes.”⁴⁶

C. Pomposity

It happens so often in which a person (though aware of the fact) does not accept truth. The Qur’an warns this group of people of God’s severe punishment:

يَسْمَعُ آيَاتِ اللَّهِ تُتْلَىٰ عَلَيْهِ ثُمَّ يُصِرُّ مُسْتَكْبِرًا كَأَن لَّمْ يَسْمَعْهَا ۚ فَبَشِّرْهُ بِعَذَابٍ أَلِيمٍ ۖ إِذَا عَلِمَ
مِنَ آيَاتِنَا شَيْئًا اتَّخَذَهَا هُزُوًا ۚ أُولَٰئِكَ لَهُمْ عَذَابٌ مُّهِينٌ

“Who hears the communications of Allah recited to him, then persists proudly as though he has not heard them? So announce to him a painful punishment. And when he comes to know of any of Our communications, he takes it for a jest, these it is which shall have abasing chastisement.” (45:8 - 9)

إِنَّ الَّذِينَ يُجَادِلُونَ فِي آيَاتِ اللَّهِ بِغَيْرِ سُلْطَانٍ أَتَاهُمْ ۖ إِن فِي صُدُورِهِمْ إِلَّا كِبْرٌ مَّا هُمْ بِبَالِغِيهِ ۚ
فَاسْتَعِذْ بِاللَّهِ

“Surely (as for) those who dispute about the communications of God without any authority which has come to them, there is naught in their breasts but (a desire) to become great which they shall never attain to...” (40:56)

فَلَمَّا جَاءَتْهُمْ آيَاتُنَا مُبْصِرَةً قَالُوا هَذَا سِحْرٌ مُّبِينٌ ۚ فَلَمَّا جَاءَتْهُمْ آيَاتُنَا مُبْصِرَةً قَالُوا هَذَا سِحْرٌ مُّبِينٌ

مُبِينٌ

“So when Our clear signs came to them, they said, ‘This is clear enchantment, and they denied them unjustly and proudly while their soul had been convinced of them; consider, then how was the end of the mischief makers.’” (23:13 - 14)

فَمَا أَغْنَىٰ عَنْهُمْ سَمْعُهُمْ وَلَا أَبْصَارُهُمْ وَلَا أَفْئِدَتُهُمْ مِنْ شَيْءٍ ۚ إِذْ كَانُوا يَجْحَدُونَ بِآيَاتِ اللَّهِ

وَحَاقَ بِهِمْ مَا كَانُوا بِهِ يَسْتَهْزِئُونَ

“But neither their ears nor their eyes nor their hearts availed them aught since they denied the communications of God, and in which they mocked encompassed them.” (46:26)

إِنَّ الَّذِينَ كَذَّبُوا بِآيَاتِنَا وَاسْتَكْبَرُوا عَنْهَا لَا تُفْتَحُ لَهُمْ أَبْوَابُ السَّمَاءِ

“Surely (as for) those who reject Our communications and turn away from them haughtily, the doors of heaven shall not be opened for them.” (7:40)

وَإِذْ كُلَّمَا دَعَوْهُمْ لِتَغْفِرَ لَهُمْ جَعَلُوا أَصَابِعَهُمْ فِي آذَانِهِمْ وَاسْتَغْشَوْا ثِيَابَهُمْ وَأَصْرُوا

وَاسْتَكْبَرُوا اسْتِكْبَارًا

“And whenever I have called them in which You may forgive them, they put their fingers in their ears, cover themselves with their garments, and persist and are puffed up with pride.” (71:7)

ثُمَّ أَدْبَرَ وَاسْتَكْبَرَ فَقَالَ إِنْ هَذَا إِلَّا سِحْرٌ يُؤْتَى

“Then he turned back and was big with pride. Then he said, ‘This is naught but enchantment narrated.’” (74:23 - 24)

It is quoted from our Prophet (S) who said,⁴⁷

يا علي ثلاث درجات وثلاث كفارات وثلاث منجيات...وأما المهلكات فشح مطاع

وهي منبع واعجاب المرء بنفسه

“Oh ‘Ali, people perish because of three characteristics: jealousy, (carnal) desire, and egoism.”

And it has been reported from ‘Ali (a.s.) who said,

العجب يفسد العقل

“Egoism corrupts intellect.”⁴⁸

D. Blind Imitation of the Ancestors’ Opinions, Men of Authority, and the Sediments of One’s Own Thoughts

These, too, are characteristics which put barriers in the way of seeking the truth, and are repeatedly condemned in the Qur’an:

وَقَالُوا رَبَّنَا إِنَّا أَطَعْنَا سَادَتَنَا وَكُبْرَاءَنَا فَأَضَلُّونَا السَّبِيلًا

“And they shall say, ‘Oh our Lord, surely we obeyed our leaders and our great men, sot they led us astray from the path.’” (33:67)

بَلْ نَسَبُوا مَا أَفْعَيْنَا عَلَيْهِ آبَاءَنَا ۚ أَوْلُو كَانُوا آبَائُهُمْ لَا يَعْقِلُونَ شَيْئًا وَلَا يَهْتَدُونَ

“Nay, we follow what we found our fathers upon. What, and though their fathers had no sense at all, nor did they follow the right way.” (2:170)

فَلَمَّا جَاءَهُمْ رَسُولُهُمْ بِالْبَيِّنَاتِ فَرِحُوا بِمَا عِنْدَهُمْ مِنَ الْعِلْمِ وَحَاقَ بِهِمْ مَا كَانُوا بِهِ يَسْتَهْزِئُونَ

“Then when their apostles came to them with clear arguments, they exulted in what they had with them of knowledge, and there beset them which they used to mock.” (40:83)

وَإِذَا قِيلَ لَهُمْ تَعَالَوْا إِلَىٰ مَا أَنْزَلَ اللَّهُ وَإِلَىٰ الرَّسُولِ قَالُوا حَسْبُنَا مَا وَجَدْنَا عَلَيْهِ آبَاءَنَا ؕ أُولَٰئِكَ كَانُوا آبَاؤُهُمْ لَا يَعْلَمُونَ شَيْئًا وَلَا يَهْتَدُونَ

“And when it is said to them, ‘Follow what Allah has revealed and this messenger.’ They say, ‘Nay, we follow what we find our fathers upon.’ What! Even though their fathers had no sense at all, nor did they follow the right way.” (5:104)

وَكَذَٰلِكَ مَا أَرْسَلْنَا مِنْ قَبْلِكَ فِي قَرْيَةٍ مِنْ نَذِيرٍ إِلَّا قَالَ مُتْرَفُوهَا إِنَّا وَجَدْنَا آبَاءَنَا عَلَىٰ أُمَّةٍ وَإِنَّا عَلَىٰ آثَارِهِمْ مُقْتَدُونَ قَالُوا أُولَٰئِكَ جِئْتَكُمْ بِأَهْدَىٰ مِمَّا وَجَدْتُمْ عَلَيْهِ آبَاءَكُمْ ؕ قَالُوا إِنَّا بِمَا أُرْسِلْتُمْ بِهِ كَافِرُونَ فَانظُرْ كَيْفَ كَانَ عَاقِبَةُ الْمُكذِبِينَ وَإِذْ قَالَ إِبْرَاهِيمُ لِأَبِيهِ وَقَوْمِهِ إِنَّنِي بَرَاءٌ مِمَّا تَعْبُدُونَ إِلَّا الَّذِي فَطَرَنِي فَإِنَّهُ سَيَهْدِينِ وَجَعَلَهَا كَلِمَةً بَاقِيَةً فِي عَقِبِهِ لَعَلَّهُمْ يَرْجِعُونَ بَلِ امْتَعْتْ هَؤُلَاءِ وَآبَاءَهُمْ حَتَّىٰ جَاءَهُمُ الْحَقُّ وَرَسُولٌ مُبِينٌ لَمَّا جَاءَهُمُ الْحَقُّ قَالُوا هَذَا سِحْرٌ وَإِنَّا بِهِ كَافِرُونَ وَقَالُوا لَوْلَا نُزِّلَ هَٰذَا الْقُرْآنُ عَلَىٰ رَجُلٍ مِنَ الْقَرْيَتَيْنِ عَظِيمًا هُمْ يَفْسِمُونَ رَحْمَتَ رَبِّكَ ؕ نَحْنُ قَسَمْنَا بَيْنَهُمْ مَعِيشَتَهُمْ فِي الْحَيَاةِ الدُّنْيَا ؕ وَرَفَعْنَا بَعْضَهُمْ فَوْقَ بَعْضٍ دَرَجَاتٍ لِيَتَّخِذَ بَعْضُهُمْ بَعْضًا سُحْرِيًّا ؕ وَرَحِمْتَ رَبِّكَ خَيْرٌ مِمَّا يَجْمَعُونَ لَوْلَا أَنْ يَكُونَ النَّاسُ أُمَّةً وَاحِدَةً لَجَعَلْنَا لِمَنْ يَكْفُرُ بِالرَّحْمَنِ لِيُؤْتِيَهُمْ سُمْفًا مِنْ فَضَّةٍ وَمَعَارِجَ عَلَيْهَا يَظْهَرُونَ وَلِيُؤْتِيَهُمْ آبَاءًا وَسُرَرًا عَلَيْهَا يَتَّكِنُونَ

“And thus, We did not send before you any warner in a town, but those who had easy lives in it said, ‘Surely we find our fathers on a course, and surely we are followers of their footsteps.’ (The warner) said, ‘What! Even if I bring to you a better guide than which you find you find your fathers?’ They said, ‘Surely we are unbelievers with whom you are sent.’” (43:23 - 34)

وَتِلْكَ عَادٌ جَحَدُوا بِآيَاتِ رَبِّهِمْ وَعَصَوْا رُسُلَهُ وَاتَّبَعُوا أَمْرَ كُلِّ جَبَّارٍ عَنِيدٍ

“And this was ‘Ad, they denied the communications of their Lord, and disobeyed His apostles and followed the bidding of every insolent oppose (of truth).” (11:59)

فَاتَّبَعُوا أَمْرَ فِرْعَوْنَ ؕ وَمَا أَمْرُ فِرْعَوْنَ بِرَشِيدٍ

“...but they followed the bidding of Pharaoh, and Pharaoh’s bidding was not right directing.” (11:97)

E. Haste and Judgments

Haste often is the cause of carelessness and error in understanding the truth. This is why the Qur’an has warned us against it:

خُلِقَ الْإِنْسَانُ مِنْ عَجَلٍ ؕ سَأُرِيكُمْ آيَاتِي فَلَا تَسْتَعْجِلُونِ

“Man is created of haste, now will I show to you my signs; therefore, do not ask Me to hasten (them) on.” (21:37)

وَلَا تَعْجَلْ بِالْقُرْآنِ مِنْ قَبْلِ أَنْ يُقْضَىٰ إِلَيْكَ وَحْيُهُ ؕ وَقُلْ رَبِّ زِدْنِي عِلْمًا

“...and do not make haste with the Qur’an before its revelation is made complete to you.” (20:114)

يَا أَيُّهَا الَّذِينَ آمَنُوا إِن جَاءَكُمْ فَاسِقٌ بِنَبَأٍ فَتَبَيَّنُوا أَن تُصِيبُوا قَوْمًا بِجَهَالَةٍ فَتُصِيبُوا عَلَى مَا فَعَلْتُمْ تَادِيمًا

Oh you who believe, if an evil-doer comes to you with a report, look carefully into it, lest you harm a people in ignorance, they be sorry for what you have done.” (49:6)

It has been quoted from our Prophet (S) who said,⁴⁹

الإطمئنان من الله والعجلة من الشيطان إنما أهلك الناس العجلة ، ولو أن الناس تشبتوا لم يهلك أحد

“Haste is the deed of Shaytan, and tranquility is from Allah. Indeed, human beings face death when they act hastily; had men had stability they would not have perished.”

And Imam ‘Ali has been quoted as saying,⁵⁰

العجلة تمنع الإصابة

“Haste hinders one from reaching righteousness and rectitude.”

3. Ignorance

Most of the errors in judgments (whether scientific or non-scientific) originate from ignorance of the subject and lack of enough knowledge about it.

In the Qur’an, there are a goon number of verses in which ignorance has been condemned:

قَالَ رَبِّ إِنِّي أَعُوذُ بِكَ أَنْ أَسْأَلَكَ مَا لَيْسَ لِي بِهِ عِلْمٌ

He said, “My Lord, I seek refuge in You from asking You of which I have no knowledge.” (11:47)

عِلْمٌ فَلِمَ تُحَاجُّونَ فِيمَا لَيْسَ لَكُمْ بِهِ عِلْمٌ

“...why then do you dispute about which you have no knowledge?” (3:66)

وَإِنَّ كَثِيرًا لَيُضِلُّونَ بِأَهْوَاءِهِمْ بِغَيْرِ عِلْمٍ

“And most surely many would lead (people) astray to their low desires out of ignorance...” (6:119)

وَمِنَ النَّاسِ مَنْ يُجَادِلُ فِي اللَّهِ بِغَيْرِ عِلْمٍ وَلَا هُدًى وَلَا كِتَابٍ مُنِيرٍ

“And among men there is he who disputes about Allah without knowledge and without guidance and without an illuminating book.” (22:8)

وَأُبَلِّغُكُمْ مَا أُرْسِلْتُ بِهِ وَلَكِنِّي أَرَأَيْتُمْ قَوْمًا جَاهِلُونَ

“...and I deliver to you the message with which I am sent but I see you are a people who are ignorant.” (46:23)

Our great Prophet (S) is reported to have said,⁵¹

من أفتى الناس بغير علم لعنته ملائكة السموات والأرض

“The angels in the heavens and the earth curse the person who passes judgment without knowledge.”

Among the evident examples of ignorant judgments, one may include subjection to conjecture, unfounded confirmations or rejections, and superficial consideration of events and phenomena.

A. Subjection to Conjecture

In the Qur’an we have been repeatedly warned against subjection to conjecture and sacrificing knowledge to supposition:

وَقَالُوا مَا هِيَ إِلَّا حَيَاتُنَا الدُّنْيَا نَمُوتُ وَنَحْيَا وَمَا يُهْلِكُنَا إِلَّا الدَّهْرُ ۗ وَمَا لَهُم بِذَلِكَ مِنْ عِلْمٍ ۗ
إِنْ هُمْ إِلَّا يَظُنُّونَ

They say, “There is nothing but our life in this world, we live and die and nothing destroys us but time, and they have no knowledge of this, they only conjecture.” (45:24)

وَمَا لَهُمْ بِهِ مِنْ عِلْمٍ ۗ إِنْ يَتَّبِعُونَ إِلَّا الظَّنَّ ۗ وَإِنَّ الظَّنَّ لَا يُعْجِزُ مِنَ الْحَقِّ شَيْئًا

“And they have no knowledge of it, they do not follow anything but conjecture and surely conjecture does not avail against the truth at all.” (53:28)

يَظُنُّونَ بِاللَّهِ غَيْرَ الْحَقِّ ظَنَّ الْجَاهِلِيَّةِ

“They entertained about God thoughts of ignorance quite unjustly.” (3:154)

B. Unfounded Confirmations and Rejections

The Glorious Qur’an encourages us to follow reason and avoid unfounded confirmations:

قُلْ هَلْ عِنْدَكُمْ مِنْ عِلْمٍ فَتُخْرِجُوهُ لَنَا ۗ إِنْ تَتَّبِعُونَ إِلَّا الظَّنَّ وَإِنْ أَنْتُمْ إِلَّا تَخْرُصُونَ

Say, “Have you any knowledge with you so you should bring it forth to us? You only follow a conjecture and you only tell lies.” (6:148)

وَقَالُوا لَنْ يَدْخُلَ الْجَنَّةَ إِلَّا مَنْ كَانَ هُودًا أَوْ نَصَارَى ۗ تِلْكَ أَمَانِيُّهُمْ ۗ قُلْ هَاتُوا بُرْهَانَكُمْ إِنْ كُنْتُمْ صَادِقِينَ

And they said, “None shall enter the garden (of paradise) except he who is a Jew or a Christian. These are their vain desires.” Say, “Bring your proof if you are truthful.” (2:111)

قُلْ أَرَأَيْتُمْ مَا تَدْعُونَ مِنْ دُونِ اللَّهِ أَرُونِي مَاذَا خَلَقُوا مِنَ الْأَرْضِ أَمْ لَهُمْ شِرْكٌ فِي السَّمَاوَاتِ ۗ
أَتُتُونِي بِكِتَابٍ مِنْ قَبْلِ هَذَا أَوْ أَنَاظِرٍ مِنْ عِلْمٍ ۗ إِنْ كُنْتُمْ صَادِقِينَ

Say, “Have you considered what you call upon besides Allah? Show me what they have created of the earth, or have they a share in the heavens? Bring me a book before this or traces of knowledge, if you are truthful.” (46:4)

إِنَّ الَّذِينَ يُجَادِلُونَ فِي آيَاتِ اللَّهِ بِغَيْرِ سُلْطَانٍ أَتَاهُمْ ۗ إِنْ فِي صُدُورِهِمْ إِلَّا كِبْرٌ ۗ مَا هُمْ بِبَالِغِيهِ ۗ
فَاسْتَعِذْ بِاللَّهِ ۗ إِنَّهُ هُوَ السَّمِيعُ الْبَصِيرُ

“Surely (as for) those who dispute about the communications of Allah without any authority which has come to them, there is naught in their breast but (a desire) to become great which they never attain to. Therefore, seek refuge in Allah; surely He is the Hearing and the Seeing.” (40:56)

وَلَا تَقْفُ مَا لَيْسَ لَكَ بِهِ عِلْمٌ إِنَّ السَّمْعَ وَالْبَصَرَ وَالْفُؤَادَ كُلُّ أُولَئِكَ كَانَ عَنْهُ مَسْئُولًا

“And follow not those of which you have not the knowledge. Surely the hearing and the sight and the heart, all of this shall be questioned about this.” (17:36)

It is important in any research neither to confirm nor refute (reject) any view without taking into consideration all the relevant information available and even then reserve judgment until one arrives at a certain result. It is quoted from Imam al-Sadiq as having said,⁵²

إن الله تبارك وتعالى خص عباده بأيتين من كتابه أن لا يقولوا حتى يعلموا ولا يردوا ما لم يعلموا. قال الله عز وجل: ألم يؤخذ عليهم ميثاق الكتاب أن يقولوا على الله إلا الحق -

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“Allah has earmarked two verses from His Book (Qur’an) for his creatures not to speak on any subject until they know about it, nor reject what they do not know. Allah has said,

وقال: بل كذبوا بما لم يحيطوا بعلمه ولما يأتهم تأويله - يونس 39

‘Did they not pledge not to utter but the truth about God.’ And Allah has said, ‘They rejected what they did not know while they had no access to its interpretation.’”

Unfortunately, overlooking this important principle has led some research scholars in natural sciences to come unfounded generalizations or rejections, thus causing irreparable material and spiritual loss to human societies. Atheism and materialism, pre-dominant in certain academic circles, are striking examples of this wrong attitude. Those who base their judgments on perceptible only have no right to deny supra-perceptible realities. The most they are entitled to do is to keep silent in such matter.

Researches should always bear in mind the advice given by ibn Sina in his al-Isharat, waal-Tanbhat, which in fact, beautifully elaborates the spirit of the afore-mentioned Qur’anic verses. It goes as follows,⁵³ “Lest you believe in which rejecting is (a sign of) imbecility and weakness. Rejection of what is not clear to you is no less foolish than confirming what is not proved to you. Should you hear something which sounds odd to you, you should hang onto it unless you have no proof for its improbability. It is advisable you consider such issues just probable as long as they have not been rejected by firm proofs...”

C. Superficiality

The Qur’an strongly condemns those who look at the natural phenomena superficially and pass comments without trying to find reasons behind the natural events:

وَقَالُوا لَوْ كُنَّا نَسْمَعُ أَوْ نَعْقِلُ مَا كُنَّا فِي أَصْحَابِ السَّعِيرِ

And they shall say, "Had we but listened or pondered, we should not have been among the inmates of the burning fire." (67:10)

وَيَجْعَلُ الرَّجْسَ عَلَى الَّذِينَ لَا يَعْقِلُونَ

"...and He casts uncleanness on those who will not understand." (10:100)

وَإِذَا نَادَيْتُمْ إِلَى الصَّلَاةِ اتَّخَذُوهَا هُزُوءًا وَلَعِبًا ۗ ذَٰلِكَ بِأَنَّهُمْ قَوْمٌ لَا يَعْقِلُونَ

And when you call to prayer they make mockery and a joke; this is because they are a people who do not understand. (5:58)

وَمِنْهُمْ مَنْ يَسْتَمِعُونَ إِلَيْكَ ۗ أَفَأَنْتَ تُسْمِعُ الصُّمَّ وَلَوْ كَانُوا لَا يَعْقِلُونَ

And there are those of them who hear you, but can you make the deaf to hear though they will not understand?" (10:42)

أَفَلَمْ يَسِيرُوا فِي الْأَرْضِ فَتَكُونُ لَهُمْ قُلُوبٌ يَعْقِلُونَ بِهَا

And have they not travelled in the land so they could have hearts with which to understand, or ears with which to hear..." (22:46)

يَعْلَمُونَ ظَاهِرًا مِّنَ الْحَيَاةِ الدُّنْيَا وَهُمْ عَنِ الْآخِرَةِ هُمْ غَافِلُونَ

They know the outward of this world's life, but of the hereafter they are absolutely heedless." (30:7)

وَكَأَيِّنْ مِنْ آيَةٍ فِي السَّمَاوَاتِ وَالْأَرْضِ يَمُرُّونَ عَلَيْهَا وَهُمْ عَنْهَا مُعْرِضُونَ

And how many a sign in the heavens and the earth which they pass by, yet they turn aside from it." (12:105)

On the basis of the following two verses we can conclude in which the fundamental difference between man and beasts of burden lies in rationality; therefore, a person not utilizing their reason is even less conscious of the right way than animals:

إِنَّ شَرَّ الدَّوَابِّ عِنْدَ اللَّهِ الصُّمُّ الْبُكْمُ الَّذِينَ لَا يَعْقِلُونَ

Surely the vilest animals, in Allah's sight are the deaf and the dumb who do not understand." (8:22)

أَمْ تَحْسَبُ أَنَّ أَكْثَرَهُمْ يَسْمَعُونَ أَوْ يَعْقِلُونَ ۗ إِنْ هُمْ إِلَّا كَالْأَنْعَامِ ۗ بَلْ هُمْ أَضَلُّ سَبِيلًا

Or do you think most of them do hear or understand? They are nothing but as cattle, nay, they are further astray from the path." (25:44)

Indifference towards Craving for or Acceptance of Truth

One of the important factors which leads a researcher, in any field of research, to success is the researcher should solely look for the truth. The Glorious Qur'an calls on a person to seek and follow the truth:

فَيُنَبِّئُكَ أَحْسَنَهُ ۗ أُولَٰئِكَ الَّذِينَ هَدَاهُمُ اللَّهُ ۗ وَأُولَٰئِكَ هُمْ الْأُولِيَاءُ

Therefore, give good news to My servants who listen to the word, then follow the best of it. These are whom Allah has guided and who are the men of understanding. (39:18)

أَمَّنْ لَا يَهْدِي إِلَّا أَنْ يُهْدَىٰ

...certainly the truth has come from your Lord. Therefore, you should not be of the disputers.” (10:49)

فَمَاذَا بَعَدَ الْحَقِّ إِلَّا الضَّلَالُ ۗ فَأَنَّى تُصْرَفُونَ

...what is there after the truth but error, how are you then turned back? (10:32)

Furthermore, the Qur'an condemns those who have no craving for truth or do not accept it when it is told to them:

فَقَدْ كَذَّبُوا بِالْحَقِّ لَمَّا جَاءَهُمْ

So they have indeed rejected the truth when it came to them. (6:5)

لَقَدْ جِئْنَاكُمْ بِالْحَقِّ وَلَكِنَّ أَكْثَرَكُمْ لِلْحَقِّ كَارِهُونَ

Certainly we have brought you the truth but most of you are adverse to the truth. (43:78)

وَمَنْ أَظْلَمُ مِمَّنِ افْتَرَىٰ عَلَى اللَّهِ كَذِبًا أَوْ كَذَّبَ بِالْحَقِّ لَمَّا جَاءَهُ

And who is more unjust than one who forges a lie against Allah or gives the lie to the truth when it has come to him. (29:68)

سَاءَ صَرِفُ عَنِ آيَاتِي الَّذِينَ يَتَكَبَّرُونَ فِي الْأَرْضِ بِغَيْرِ الْحَقِّ وَإِنْ يَرَوْا كُلَّ آيَةٍ لَا يُؤْمِنُوا بِهَا وَإِنْ يَرَوْا سَبِيلَ الرُّشْدِ لَا يَتَّخِذُوهُ سَبِيلًا وَإِنْ يَرَوْا سَبِيلَ الْعِجْيِ يَتَّخِذُوهُ سَبِيلًا ۗ ذَٰلِكَ بِأَنَّهُمْ كَذَّبُوا بِآيَاتِنَا وَكَانُوا عَنْهَا غَافِلِينَ

I will turn away from My communications those who are unjustly proud on the earth and if they see every sign they will not believe in it, and if they see the way of rectitude they do not take it for say and if they see the way of error, they take it for a way. This is because they rejected our communications and were heedless of them.” (7:146)

In the light of the glorious verses which follow, one comes to realize the Divine Verses are instructive for people who eagerly listen to and think about what they hear, and finally accept what is right:

وَمِنْ آيَاتِهِ مَنَامُكُمْ بِاللَّيْلِ وَالنَّهَارِ وَابْتِغَاؤُكُمْ مِنْ فَضْلِهِ ۗ إِنَّ فِي ذَٰلِكَ لَآيَاتٍ لِّقَوْمٍ يَسْمَعُونَ

And one of His signs is your sleeping and your seeking of His grace by night and (by) day, most surely there are signs in this for people would hear.” (30:23)

وَاللَّهُ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَحْيَا بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا ۗ إِنَّ فِي ذَٰلِكَ لَآيَةً لِّقَوْمٍ يَسْمَعُونَ

And Allah has sent down water from the heaven (clouds) and therewith given life to the earth after its death; most surely there is a sign in this for a people would listen.” (16:65)

Guiding Principles in Understanding Nature

We have already said the Qur'an is not a book of natural science but a book of guidance and enlightenment, and wherever there is reference to the natural phenomena, it is meant to guide humans through them. We also explained God has gifted man with mental faculties so through their own endeavours and God's help they can gradually come to understand the

universe as well as their own selves and in this way get nearer to the Creator of the universe.

According to the following glorious verses:

وَنَزَّلْنَا عَلَيْكَ الْكِتَابَ تِبْيَانًا لِّكُلِّ شَيْءٍ وَهُدًى وَرَحْمَةً وَبُشْرَىٰ لِلْمُسْلِمِينَ

“...and we have revealed the book to you explaining clearly everything and as a guidance and mercy and good news for those who submit.” (16:89)

مَا فَرَطْنَا فِي الْكِتَابِ مِنْ شَيْءٍ

“...we have not neglected anything in the Book...” (6:38)

The Qur’an undertakes the guidance of human beings in all stages of life. One, therefore, can expect to derive the guiding principles for researches done in natural sciences from the Qur’an. By inference from the Qur’an we believe, in addition to the principles of logic, such as the principle of “non-contradiction,” the following principles should be also used as the guidelines for scientific research.

1. Faith in the Principle of Divine Unity (al-Tawhid)

According to the Qur’anic verses, God is the only Creator and Ruler of the whole universe. Everything originates from Him and ends in Him. All creatures praise Allah, as the purpose behind the creation of man was to approach Allah through worshipping Him:

وَمَا خَلَقْتُ الْجِنَّ وَالْإِنْسَ إِلَّا لِيَعْبُدُونِ

“And I have not created the jinn and the human except in whom they would serve Me.” (51:56)

Hence, every step one takes should be aimed at gaining His consent and approaching oneself to the Almighty. The search for the discovery of nature is no exception to this rule. Observance of the grandeur in the Divine deeds, and making use of the possibilities therein for humans to attain the eternal happiness should be given priority.

The Qur’an does not approve of such cognitions which aim at nothing except satisfying one’s own curiosity. On the way to understanding of nature, one should not busy oneself with the means and forget the ultimate End. If the researcher realizes God is Infinite in all respects, his attention to this infinite source keeps him moving on without hindrance, and he will be able to find more and more about the magnificence of creation. This is the surest way of attaining proximity to the Creator of the universe.

The understanding of nature should lead us along the road covered by Prophet Ibrahim, i.e. to commence from the beginning of the string of causes and reach the end - the Lord of the universe.

فَلَمَّا جَنَّ عَلَيْهِ اللَّيْلُ رَأَىٰ كَوْكَبًا ۖ قَالَ هَٰذَا رَبِّي ۖ فَلَمَّا أَفَلَ قَالَ لَا أُحِبُّ الْآفِلِينَ فَلَمَّا رَأَى الْقَمَرَ بَازِعًا قَالَ هَٰذَا رَبِّي ۖ فَلَمَّا أَفَلَ قَالَ لَئِن لَّمْ يَهْدِنِي رَبِّي لَأَكُونَنَّ مِنَ الْقَوْمِ الضَّالِّينَ فَلَمَّا رَأَى الشَّمْسَ بَازِعَةً قَالَ هَٰذَا رَبِّي ۖ فَلَمَّا أَفَلَتْ قَالَ يَا قَوْمِ إِنِّي بَرِيءٌ مِّمَّا تُشْرِكُونَ إِنِّي وَجَّهْتُ وَجْهِيَ لِلَّذِي فَطَرَ السَّمَاوَاتِ وَالْأَرْضَ حَنِيفًا ۖ وَمَا أَنَا مِنَ الْمُشْرِكِينَ

“So when the night over-shadowed him, he saw a star, said he, ‘Is this my Lord?’ So when it set, he said, ‘I do not love the setting ones.’ Then when he saw the moon rising, he said, ‘Is this my Lord?’ So when it set, he said, ‘If my Lord had not guided me I should certainly be of the erring people.’ Then when he saw the sun rising, he said, ‘Is this my Lord? Is this the greatest?’ So when it set he said, ‘Oh my people, surely I am clear of what you set up (with Allah). Surely I have turned myself, being upright, wholly to Him who originated the heavens and the earth, and I am not of the polytheists.’” (6:76 - 79)

As a result, Ibrahim (a.s.) was led to see the spiritual dimension of the heavens and the earth:

وَكَذَلِكَ نُرِي إِبْرَاهِيمَ مَلَكُوتَ السَّمَاوَاتِ وَالْأَرْضِ وَلِيَكُونَ مِنَ الْمُوقِنِينَ

And thus did We show Ibrahim the spiritual dimension of the heavens and the earth and so he might of those who are sure. (6:75)

And this is the way which all researches have been invited to follow:

أَوَلَمْ يَنْظُرُوا فِي مَلَكُوتِ السَّمَاوَاتِ وَالْأَرْضِ وَمَا خَلَقَ اللَّهُ مِنْ شَيْءٍ

“Do they not consider the spiritual dimension of the heavens and the earth and whatever things Allah has created?” (7:185)

A firm belief in monotheism arms the researcher with a comprehensive view of nature, and they no more see it as a bundle of isolated pieces; rather, they observe their inter-relations and their common origin. He sees a unity behind this multiplicity. Experiences of past generations show scholars in the past always endeavoured to find a model according to which they could describe the whole nature. The Greeks had their designs for the explanation of the whole universe. In the Islamic world, too, different schools tried in different ways to discover a pattern for relating together various components of nature.

After the Renaissance, Newton tried to explain the celestial and terrestrial movements by the help of a series of laws. Then Einstein tried to take a step further than Newton in relation to natural issues. In recent years, too, the main effort of theoretical physicists has been to derive all the natural forces from one source. In all these stages it is quite apparent in which scientists have been trying to find suitable patterns by the help of which they could interpret the natural phenomena. They have been trying to generalize the result of an experiment carried out on the earth and apply it to the whole physical world.

This character of seeking for unification has been noticed among all scientists (whether materialists or non-materialist), and seems to be intrinsic. The difference between the two groups is the formers come to stop as soon as they reach the appearance, while the latter seek for the Co-ordinator of this harmonious system. Here we cite two glorious verses from the Qur’an. The first refers to the first group, while the second reveals the opinion of the second:

وَقَالُوا مَا هِيَ إِلَّا حَيَاتُنَا الدُّنْيَا نَمُوتُ وَنَحْيَا وَمَا يُهْلِكُنَا إِلَّا الدَّهْرُ وَمَا لَهُم بِذَلِكَ مِنْ عِلْمٍ
إِنْ هُمْ إِلَّا يَظُنُّونَ

And they say, "There is nothing but our life in this world, we live and die and nothing destroys us but time, and they have no knowledge of this, they only conjecture. (45:24)

خَلَقَ السَّمَاوَاتِ وَالْأَرْضَ بِالْحَقِّ ۗ تَعَالَىٰ عَمَّا يُشْرِكُونَ

He created the heavens and the earth in truth, highly exalted be He above what they associate (with Him). (16:3)

An important point, which is greatly emphasized in the Qur'an, is the existence of order in natural phenomena, harmony among the various elements of nature, and a purpose in nature:

وَكُلُّ شَيْءٍ عِنْدَهُ بِمِقْدَارٍ

And there is a measure with Him of everything. (13:8)

وَخَلَقَ كُلَّ شَيْءٍ فَقَدَرَهُ تَقْدِيرًا

And who created everything then ordained for it a measure. (25:2)

مَا تَرَىٰ فِي خَلْقِ الرَّحْمَنِ مِن تَفَوتٍ ۗ فَارْجِعِ الْبَصَرَ هَلْ تَرَىٰ مِن فُتُورٍ

You see no incongruity in the creation of the Beneficent Allah, then look again, can you see any disorder? (67:3)

هُوَ الَّذِي جَعَلَ الشَّمْسُ ضِيَاءً وَالْقَمَرَ نُورًا وَقَدَرَهُ مَنَازِلَ لِتَعْلَمُوا عَدَدَ السِّنِينَ وَالْحِسَابَ ۗ مَا

خَلَقَ اللَّهُ ذَٰلِكَ إِلَّا بِالْحَقِّ ۗ يُفَصِّلُ الْآيَاتِ لِقَوْمٍ يَعْلَمُونَ

He it is Who made the sun a shining brightness and the moon a light, and ordained for it mansions which you might know the computation of years and the reckoning. Allah did not create it but with truth, He makes the signs manifest for a people who know. (10:5)

The existence of this order and design has been pointed out as a sign of monotheism, the unity of the Almighty:

لَوْ كَانَ فِيهِمَا آلِهَةٌ إِلَّا اللَّهُ لَفَسَدَتَا

If there had been in them any gods except Allah, they would both have certainly been in a state of disorder. (21:22)

وَمَا كَانَ مَعَهُ مِنَ إِلَٰهٍ ۚ إِذَا لَدَّهَبَ كُلُّ إِلَٰهٍ بِمَا خَلَقَ وَلَعَلَّا بَعْضُهُمْ عَلَىٰ بَعْضٍ

...and never was there with Him any (other) god; in which case each god would have certainly taken away what he created, and some of them would certainly have over-powered others. Glory be to Allah above what they describe. (23:91)

صُنِعَ اللَّهُ الَّذِي أَنْقَرَنَ كُلَّ شَيْءٍ

...the handiwork of Allah who has made everything thoroughly... (27:88)

Belief in this principle is an important factor in encouraging scholars in their discovery of the laws of nature. In principle, any attempt to discover inter-relations in various aspects of nature without admitting order would look futile, as it would not acquire a universal validity but would remain a local and temporary one.

A belief in this principle makes us realise in whatever we failed to find the order in a natural phenomenon during our study, it would be due to the

insufficiency of our knowledge rather than the disorder or rule of chance in nature. During the early years of the second quarter of the 20th century, when quantum mechanics was appearing, some of the pioneers of the theoretical physics rejected the idea of the existence of order in the atomic domain. Einstein, though unable to present a successful theory against it, was able to reject it through relying on the principle of order in nature. In his letter (b. December 1926) he wrote:⁵⁴

“Quantum mechanics is certainly imposing. But an inner voice tells me it is not yet the real thing. The theory says a lot, but does not really bring us any closer to the secret of the ‘old one.’ I, at any rate, am convinced he is not playing the dice.”

In another letter (b. September 1944) he wrote, “We have become Antipodean in our scientific expectations. You believe in God who plays dice, and I, in complete law and order in a world which objectively exists, and which i, in a wildly speculative way, am trying to capture. I firmly believe, but I hope someone will discover a more realistic way; or rather a more tangible basis than it has been my lot to find. Even the great initial success of the quantum theory does not make me believe in the fundamental dice game, although I am well aware our younger colleagues interpret this as a consequence of senility. No doubt the day will come when we will see whose instinctive attitude was the correct one.”

Despite their disbelief in monotheism, some philosophers believe in the existence of order in nature. But from our point of view, order, unity, and co-ordination in nature can only be accounted for through the principle of monotheism (God’s Oneness).

Another conclusion drawn from the principle of monotheism in the researcher, by observing the relation between the various aspects of nature, finds a unity among different branches of science and considers everyone of them as a description of one dimension of the whole reality, and, therefore, does not reject any of them on the ground of his own unfamiliarity with it.

2. Belief in the Reality of the External World

From the Qur’anic viewpoint, there is a real external world, independent of our mind:

وَفِي الْأَرْضِ آيَاتٌ لِلْمُوقِنِينَ
وَفِي الْأَرْضِ آيَاتٌ لِلْمُوقِنِينَ

And in the earth there are signs for those who are sure, and in your own souls (too). Will you then not see? (51:20 - 21)

خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ أَكْبَرُ مِنْ خَلْقِ النَّاسِ وَلَكِنَّ أَكْثَرَ النَّاسِ لَا يَعْلَمُونَ

Certainly the creation of the heavens and the earth is greater than the creation of the men, but most people do not know. (40:57)

سُبْحَانَ الَّذِي خَلَقَ الْأَزْوَاجَ كُلَّهَا مِمَّا تُنْبِتُ الْأَرْضُ وَمِنْ أَنْفُسِهِمْ وَمِمَّا لَا يَعْلَمُونَ

Glory be to Him Who created pairs of all things, of what the earth grows, and of their kind and of what they do not know. (36:36)

الَّذِي جَعَلَ لَكُمُ الْأَرْضَ مَهْدًا وَجَعَلَ لَكُمْ فِيهَا سُبُلًا لَعَلَّكُمْ تَهْتَدُونَ وَالَّذِي نَزَّلَ مِنَ السَّمَاءِ مَاءً بِقَدَرٍ فَأَنْشَرْنَا بِهِ بَلْدَةً مَيِّتًا كَذَلِكَ تُخْرَجُونَ وَالَّذِي خَلَقَ الْأَزْوَاجَ كُلَّهَا وَجَعَلَ لَكُمْ مِنَ الْفُلْكِ وَالْأَنْعَامِ مَا تَرْكَبُونَ

Glory be to Him Who created pairs of all things of what the earth grows and of their kind and of what they do not know (36:36)

وَالَّذِي خَلَقَ الْأَزْوَاجَ كُلَّهَا وَجَعَلَ لَكُمْ مِنَ الْفُلْكِ وَالْأَنْعَامِ مَا تَرْكَبُونَ وَالَّذِي خَلَقَ الْأَزْوَاجَ كُلَّهَا وَجَعَلَ لَكُمْ مِنَ الْفُلْكِ وَالْأَنْعَامِ مَا تَرْكَبُونَ

He Who made the earth a resting place for you and made in it ways for you so you may go aright. And He Who created pairs of all things, and made for you of the ships and the cattle what you ride on. (43:10, 12)

وَاللَّهُ أَخْرَجَكُمْ مِنْ بُطُونِ أُمَّهَاتِكُمْ لَا تَعْلَمُونَ شَيْئًا وَجَعَلَ لَكُمُ السَّمْعَ وَالْأَبْصَارَ وَالْأَفْئِدَةَ

And Allah has brought you forth from the wombs of your mothers - you did not know anything - and He gave you hearing and sight and hearts... (16:78)

The verses like:

وَتَحْسَبُهُمْ آيْقَاطًا وَهُمْ رُفُودٌ ۖ وَنُقَلِّبُهُمْ ذَاتَ الْيَمِينِ وَذَاتَ الشِّمَالِ ۖ وَكَلْبُهُمْ بَاسِطٌ ذِرَاعَيْهِ بِالْوَصِيدِ ۖ لَوِ اطَّلَعْتَ عَلَيْهِمْ لَوَلَّيْتَ مِنْهُمْ فِرَارًا وَلَمُلِئْتَ مِنْهُمْ رُعبًا

And you might think awake while they are asleep, and We turned them about to the right and to the left, while their dog (lay) outstretching his paws at the entrance; if you looked at them you would certainly turn back from them in flight, and you would certainly be filled with awe because of them. (18:18)

وَتَرَى الْجِبَالَ تَحْسَبُهَا جَامِدَةً وَهِيَ تَمُرُّ مَرَّ السَّحَابِ

And you see the mountains, you think them to be sailing and they shall pass away as the passing away of the cloud. (27:88)

وَمَا يَتَّبِعْ أَكْثَرُهُمْ إِلَّا ظَنًّا ۚ إِنَّ الظَّنَّ لَا يُغْنِي مِنَ الْحَقِّ شَيْئًا

And most of them do not follow (anything) but conjecture; surely conjecture will not avail against the truth. (10:36)

These verses indicate there exists other realities other than an independent of our minds. If our mental image of a certain object does not correspond with the external reality, our mental image is not more than a fancy or imagination, which cannot lead us to reality.

Moreover, had there not been an external world, the Qur'an would not have so emphatically recommended the study of nature:

فَلْيَنْظُرُوا فِي الْأَرْضِ فَمَا نَظَرُوا كَيْفَ بَدَأَ الْخَلْقَ

Say, "Travel on the earth and see how He makes the first creation..." (29:20)

أَوَلَمْ يَنْظُرُوا فِي مَلَكُوتِ السَّمَاوَاتِ وَالْأَرْضِ وَمَا خَلَقَ اللَّهُ مِنْ شَيْءٍ

Do they not consider the spiritual dimension of the heavens and the earth and whatever things Allah has created?(7:185)

Belief in the reality of the external world is the basis of all researches in empirical sciences and without it any scientific research would be only a mental exercise. As Einstein puts it in his commemorative paper (1431) on Maxwell,⁵⁵ “The belief in an external world independent of the perceiving subject is the basis of all natural sciences.”

3. Faith in Supra-physical reality and Limitation of Human Knowledge

We learn from the Qur’an certain principles in this regard, which are discussed below:

A. Human Knowledge is Limited

وَمَا أُوتِيتُمْ مِنَ الْعِلْمِ إِلَّا قَلِيلًا

...And you were not given aught of knowledge but a little. (17:85)

سُبْحَانَ الَّذِي خَلَقَ الْأَزْوَاجَ كُلَّهَا مِمَّا تُنْبِتُ الْأَرْضُ وَمِنْ أَنْفُسِهِمْ وَمِمَّا لَا يَعْلَمُونَ

Glory be to Him who created pairs of all things of what the earth grows, and of their kind and of what they do not know. (36:36)

وَالْحَيْلِ وَالْبِغَالِ وَالْحَمِيرِ لِيَتَرَكَّبُوهَا وَزِينَةً ۗ وَيَخْلُقُ مَا لَا تَعْلَمُونَ

And (He made) horses and mules and asses in which you might ride upon them and as an ornament, and He creates what you do not know. (16:8)

B. There are many things we cannot get through our senses

اللَّهُ الَّذِي رَفَعَ السَّمَاوَاتِ بِغَيْرِ عَمَدٍ تَرَوْنَهَا

Allah is He Who roused the heavens without any pillars in which you see, and He is firm in power... (13:2)

C. We should believe in the occult, for example, in the super-natural realities

C. We should believe in the occult, for example, in the super-natural realities⁵⁶

ذَلِكَ الْكِتَابُ لَا رَيْبَ فِيهِ هُدًى لِّلْمُتَّقِينَ الَّذِينَ يُؤْمِنُونَ بِالْغَيْبِ وَيُقِيمُونَ الصَّلَاةَ وَمِمَّا

رَزَقْنَاهُمْ يُنْفِقُونَ

This book, there is no doubt in it, is a guide to those who guard (against evil). Those who believe in the occult and keep up prayer and spend out of what We have given them. (2:2 - 3)

The faith in the limitation of human knowledge and the metaphysical realities lead us to the following corollaries:

1. Not limit our mental activity to the sensory stage.

2. Never to think we have discovered everything. Of course, this by no means a human will not be able to discover any of the truths in the world, but we should not claim to have a full understanding of a natural phenomenon at a certain time. Sayyid Qutb in his interpretation of the verse 3 in chapter al-Baqarah says,⁵⁷

“Faith in the supra-physical is a stage by attaining which a person rises above the level of animality - at which perception is confined to the domain of external senses - and reaches the stage of humanity, a much larger and more spacious domain beyond the limited domain of external senses opens up before them. The transference to this new stage brings a radical change in a person’s view of the reality of the existence in general, and their own self in particular, and they perceive hidden powers in the universe; how, they are greatly affected by a new feeling and can perceive in the creation the Power and Wisdom at work behind it.

“This transference affects the realities between a person whose life is entrenched in the limited span of sensory perception and the one whose soul and insight take them to the vast kingdom (of higher realities) where he can hear and feel the mysterious music and inspiration gushes out of the depths of their heart. They feel the extent of the universe is too great for them to comprehend during their short span of life. They realize beyond the seen and unseen universe of existence, there exists a truth much greater than existence and He is the Creator and the Preserver of it. This truth is not visible to human eyes and is not discerned by human wisdom alone.

“This feeling (knowledge of the immensity of the unknown) safeguards the limited human faculty of thinking and does not let it go astray and waste itself in the areas which it has been created.”

4. Believe in the Principle of General Causality

The principle of causality says every event requires a cause. This principle has two important corollaries:

a) The Principle of Determinism: Any cause requires an effect, and without a cause it is impossible to have an effect.

b) The Principle of Uniformity of Nature: Similar causes entail similar effects.

These two corollaries are inseparable from the principle of general causality, and any violation in them will be the violation of the principle of general causality:⁵⁸

A. In the Qur’an we have many verses which talk of unchangeable patterns (sunan) of Allah in the Universe:

سُنَّةَ مَنْ قَدْ أَرْسَلْنَا قَبْلَكَ مِنْ رُسُلِنَا وَلَا يَجِدُ لِسُنَّتِنَا تَحْوِيلًا

(This is Our) course with regard to those of Our apostles who We sent before you, and you shall not find a change in our course. (17:77)

سُنَّةَ اللَّهِ فِي الَّذِينَ خَلَوْا مِنْ قَبْلُ ۖ وَلَنْ يَجِدَ لِسُنَّةِ اللَّهِ تَبْدِيلًا

(Such has been) the course of Allah with respect to those who have gone before, and you shall not find any change in the course of Allah. (33:62)

مَا كَانَ عَلَى النَّبِيِّ مِنْ حَرَجٍ فِيمَا فَرَضَ اللَّهُ لَهُ ۖ سُنَّةَ اللَّهِ فِي الَّذِينَ خَلَوْا مِنْ قَبْلُ ۖ وَكَانَ أَمْرُ

اللَّهِ قَدَرًا مَفْعُورًا

There is no harm in the prophet doing which Allah has ordained for him, such has been the course of Allah with respect to those who have

gone before, and the command of Allah is a decree which is made absolute. (33:38)

يُرِيدُ اللَّهُ لِيُبَيِّنَ لَكُمْ وَيَهْدِيَكُمْ سُنْنَ الدِّينِ مِنْ قَبْلِكُمْ

Allah desires to explain to you and to guide you into the ways of those before you and to turn to you (mercifully) and Allah is all knowing. (4:26)
We find many examples of these patterns in the Qur'an itself:

إِنَّ اللَّهَ لَا يُعَيِّرُ مَا بِقَوْمٍ حَتَّى يُعَيِّرُوا مَا بِأَنْفُسِهِمْ

Most surely Allah does not change the condition of people until they change their own condition. (13:11)

وَإِذَا أَرَدْنَا أَنْ نُهْلِكَ قَرْيَةً أَمَرْنَا مُتْرَفِيهَا فَفَسَقُوا فِيهَا

“And when We wish to destroy a town, We send Our commandment to the people of it who lead easy lives, but they transgress...” So We destroy it with utter destruction. (17:16)

وَعَدَ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَعَمِلُوا الصَّالِحَاتِ لَيَسْتَخْلِفَنَّهُمْ فِي الْأَرْضِ

Allah has promised to those of you who believe and do good in which We most certainly make them rulers in the earth. (24:55)

وَلَا تَهِنُوا وَلَا تَحْزِنُوا وَأَنْتُمْ الْأَعْلَوْنَ إِنْ كُنْتُمْ مُؤْمِنِينَ

And be not infirm and be not grieving and you shall have the upper hand if you are believers. (3:139)

وَمَا كَانَ رَبُّكَ لِيُهْلِكَ الْقُرَىٰ بِظُلْمٍ وَأَهْلِهَا مُصْلِحُونَ

And it did not beseem your Lord to have destroyed the towns tyrannously, while their people acted well. (11:117)

فَأَمَّا الزَّبَدُ فَيَذْهَبُ جُفَاءً ۗ وَأَمَّا مَا يَنْفَعُ النَّاسَ فَيَمْكُتُ فِي الْأَرْضِ

“...then as for the scum, it passes away as a worthless thing and as for which profits the people, it tarries in the earth...” (13:17)

وَلَا يَجِيئُ الْمَكْرُ السَّيِّئُ إِلَّا بِأَهْلِهِ ۗ فَهَلْ يَنْظُرُونَ إِلَّا سُنَّتَ الْأَوَّلِينَ ۗ فَلَنْ يَجِدَ لِسُنَّتِ اللَّهِ

تَبْدِيلًا ۗ وَلَنْ يَجِدَ لِسُنَّتِ اللَّهِ تَحْوِيلًا

“...and the evil plans shall not beset any save the authors of it. Then should they wait for aught except the way of the former people? For you shall not find any alteration in the course of Allah and you shall not find any change in the course of Allah.” (35:43)

B. Some of the Qur'anic verses indicate both the creation and the course of events in nature follow a certain measure, and every natural being has a definite and precise life span:

الشَّمْسُ وَالْقَمَرُ بِحُسْبَانٍ

“The sun and the moon follow a reckoning.” (55:5)

وَإِنْ مِنْ شَيْءٍ إِلَّا عِنْدَنَا خَزَائِنُهُ وَمَا نُنزِّلُهُ إِلَّا بِقَدَرٍ مَعْلُومٍ

And there is not a thing but with Us are the treasures of it, and We do not send it down but in a knowing manner. (15:21)

وَكُلُّ شَيْءٍ عِنْدَهُ بِمِقْدَارٍ

“...and there is a measure with Him of everything.” (13:8)

أَوَلَمْ يَتَفَكَّرُوا فِي أَنفُسِهِمْ ۗ مَا خَلَقَ اللَّهُ السَّمَاوَاتِ وَالْأَرْضَ وَمَا بَيْنَهُمَا إِلَّا بِالْحَقِّ وَأَجَلٍ

مُسَمًّى ۗ وَإِنَّ كَثِيرًا مِّنَ النَّاسِ بِلِقَاءِ رَبِّهِمْ لَكَافِرُونَ

Do they not reflect within themselves, ‘Allah did not create the heavens and the earth and what is between them but with truth and (for) an appointed term?’ And most surely most of the people are deniers of the meeting of their Lord.” (30:8)

C. Some verses mention the mechanism and special course of certain events in nature:

وَلَقَدْ خَلَقْنَا الْإِنْسَانَ مِن سُلَالَةٍ مِّن طِينٍ وَلَقَدْ خَلَقْنَا الْإِنْسَانَ مِن سُلَالَةٍ مِّن طِينٍ

“And certainly We created man of an extract of clay, then we made a small life germ in a firm resting place.” (23:12 - 13)

وَأَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجَ بِهِ مِنَ الثَّمَرَاتِ رِزْقًا لَّكُمْ

And (Who) sends down rain from the cloud, then brings forth with it subsistence for you. (2:22)

قَالَ إِبْرَاهِيمُ فَإِنَّ اللَّهَ يَأْتِي بِالشَّمْسِ مِنَ الْمَشْرِقِ فَأْتِ بِهَا مِنَ الْمَغْرِبِ فَبُهِتَ الَّذِي كَفَرَ

...Ibrahim said, “So surely Allah causes the sun to rise from the east. Then make it rise from the west.” Thus he who disbelieved was confounded. (2:58)

وَالشَّمْسُ تَجْرِي لِمُسْتَقَرٍّ لَّهَا ۚ ذَلِكَ تَقْدِيرُ الْعَزِيزِ الْعَلِيمِ وَالْقَمَرَ قَدَرْنَا مَنَازِلَ حَتَّىٰ عَادَ

كَالْعُرْجُونِ الْقَدِيمِ لَا الشَّمْسُ يَنْبَغِي لَهَا أَنْ تُدْرِكَ الْقَمَرَ وَلَا اللَّيْلُ سَابِقُ النَّهَارِ ۗ وَكُلٌّ فِي فَلَكٍ

يَسْبَحُونَ

And the sun runs on to a term appointed for it, which is the ordinance of the mighty, the knowing. And (as for) the moon, We have ordained for it stages until it becomes again as an old dry palm branch. Neither is it allowable to the sun it should overtake the moon, nor can the night outstrip the day, and all of them float through space.” (36:35 - 40)

وَاللَّهُ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَحْيَا بِهِ الْأَرْضَ بَعْدَ مَوْتِهَا

And Allah has sent down water from the cloud and therewith given life to the earth after its death. (16:65)

وَمِن ثَمَرَاتِ النَّخِيلِ وَالْأَعْنَابِ تَتَّخِذُونَ مِنْهُ سَكَرًا وَرِزْقًا حَسَنًا

“And of the fruits of the palms and the grapes, you obtain from them intoxication and goodly provision.” (16:67)

وَأَرْسَلْنَا الرِّيَّاحَ لَوَاقِحَ

“And We send the winds fertilizing...” (15:22)

فَاتَّبَعُوهُمْ يُعَذِّبُهُمُ اللَّهُ بِأَيْدِيكُمْ وَيُخْرِجُهُمْ وَيَنْصُرْكُمْ عَلَيْهِمْ وَيَشْفِ صُدُورَ قَوْمٍ مُّؤْمِنِينَ

Fight them, Allah will punish them by your hands and bring them to disgrace and assist you against them and heal the hearts of a believing people. (9:14)

These verses show certain definite laws rule over the universe. This, however, is meaningful only if the principle of general causality is valid. In this case, every event stands in its definite place, i.e. every event appears under definite conditions and at a definite time and place. This does not imply events are independent of the Almighty's Will and Order, but it means in this system, everything is realized by God's Will, but through a special channel. Verses of the following type confirm this view:

وَالْبَلَدُ الطَّيِّبُ يَخْرُجُ نَبَاتُهُ بِإِذْنِ رَبِّهِ وَالَّذِي خَبثَ لَا يَخْرُجُ إِلَّا نَكِدًا

And as for the good land, its vegetation springs forth (abundantly) by the permission of its Lord, and (as for) this which is inferior (its herbage) comes forth but scantily.” (7:58)

قَدْ جَاءَكُمْ رَسُولُنَا يُبَيِّنُ لَكُمْ كَثِيرًا مِمَّا كُنْتُمْ تُخْفُونَ مِنَ الْكِتَابِ وَيَعْفُو عَنْ كَثِيرٍ ۖ قَدْ جَاءَكُمْ مِنَ اللَّهِ نُورٌ وَكِتَابٌ مُبِينٌ يَهْدِي بِهِ اللَّهُ مَنِ اتَّبَعَ رِضْوَانَهُ سُبُلَ السَّلَامِ وَيُخْرِجُهُم مِنَ الظُّلُمَاتِ إِلَى النُّورِ بِإِذْنِهِ

...Indeed, there has come to you light and a clear book from Allah. With it Allah guides him who will follow His pleasure into the ways of safety and brings them out of utter darkness and into light by His will. (5:15 - 16)

The first verse indicates although God's Will is necessary for the growth of plants, yet the suitability of the land is also a condition. Not every sort of plant can be raised in every piece of land. With the suitability of the land God makes it possible for the plant to grow.

It can be also deduced from verses 15 - 16 of the chapter of Ma'idah (food) only those seeking God's consent would enjoy His guidance in the Qur'an.

Some well known Muslim theologians, particularly Asharite school, on the basis of verses like:

قُلِ اللَّهُ خَالِقُ كُلِّ شَيْءٍ وَهُوَ الْوَاحِدُ الْقَهَّارُ

Say, "Allah is the Creator of all things, and He is the One, the Supreme.” (13:16)

وَاللَّهُ خَلَقَكُمْ وَمَا تَعْمَلُونَ

And Allah has created you and what you make. (37:96)

أَلَا لَهُ الْخَلْقُ وَالْأَمْرُ

Surely His is the creation and command. (7:54)

بَلِ لِلَّهِ الْأَمْرُ جَمِيعًا

The commandment is wholly Allah's (13:31)

أَفَرَأَيْتُمْ مَا تَحْرُثُونَ أَفَرَأَيْتُمْ مَا تَحْرُثُونَ نَأْفَرَأَيْتُمْ مَا تَحْرُثُونَ

Have you considered what you saw? Is it you which causes it to grow or are We the causes of growth? (53:63 - 64)

which attributes creation and governance of the universe to Allah, and verses like:

قُلْنَا يَا نَارُ كُونِي بَرْدًا وَسَلَامًا عَلَيَّ اِبْرَاهِيمَ

We said, "Oh fire, be a comfort and peace to Ibrahim." (21:69)

which are indicative of the possibility of miracles, have rejected the law of causation in the physical world and say physical means have no role in the realization of a phenomenon. The cause of any occurrence is God's Will, except it is God's way to create what we call "effect" after what we call "cause," without any relation between them which necessitates the effect to follow the cause. They say, "It is not fire which causes the cotton to burn, rather, it is Allah who makes the cotton burn and turns it into ashes, and of course, if God does not want, the fire will not burn the cotton." Al-Ghazali, a chief representative of Ash'arism, in al-Ghazali, a chief representative of Ash'arism, in "Tahafut al-Falasifah" says,⁵⁹

"According to us, the connection between what is usually believed to be a cause and what is believed to be an effect is not a necessary connection. In the case of two things which are not identical and the affirmation or negation of one is not implied in the affirmation or negation of the other, neither the existence, not the non-existence of the one necessitates the existence or the non-existence of the other. For example, the satisfaction of thirst does not imply drinking, nor satiety, eating, nor burning, contact with fire, nor light, sunrise, nor decapitation, death, nor recovery, taking of medicine, nor evacuation, the taking of a purgative, and so on for all the empirical connections existing in medicine, astronomy, the sciences and the crafts.

For the connections in these things are based on a prior power of God to create them in a successive order, though not because this connection is necessary in itself and cannot be disjoined; on the contrary, it is in God's power to create satiety without eating, and death without decapitation, and to let life persist notwithstanding the decapitation, and son with respect to all connections. The philosophers, however, deny this possibility and claim it is impossible to investigate all these innumerable connections would take too long, and so we shall chose one single example, namely the burning of cotton and through contact with fire, for we regard it as possible in which the contact might occur without burning taking place, and also the cotton might be changed into ashes without any contact with fire, although the philosophers deny this possibility.

It is God who made the cotton burn and made it ashes either through intermediation of angels or without intermediation. For fire is a dead body which has no action and what is the proof in which it is the agent? Indeed, the philosophers have no other proof than the observation of the occurrence of the burning, when there is contact with fire, but observation proves only simultaneity, not causation, and, in reality, there is no other cause but God.

This theory is rooted in the idea in accepting a decisive order in the world and require the denial of God's power. Muslim philosophers reject the Ash'arite view and say,

a) The co-occurrence of two causes operating on a single object is impossible only when the two causes operate transversally, whereas the longitudinal operation of two causes on the same object is quite possible.⁶⁰ If we believe in the longitudinal system of causes, we could relate every occurrence to God, because He gives existence. This emanation, however, takes place through special channels. This is the reason why God attributes the regulating of affairs sometimes to Himself and sometimes to the angels:

يُدِيرُ الْأُمْرَ مِنَ السَّمَاءِ إِلَى الْأَرْضِ

...He regulates the affairs from the heaven to the earth... (32:5)

فَالْمُدِيرَاتِ أَمْرًا

...By those who regulate an affair... (79:5)

He also attributes taking of souls to Himself or to angels:

اللَّهُ يَتَوَفَّى الْأَنْفُسَ حِينَ مَوْتِهَا

Allah takes the souls at the time of their death... (39:42)

فَلَنْ يَتَوَفَّاكُمْ مَلَكَ الْمَوْتِ الَّذِي وُكِّلَ بِكُمْ

Say, "The angel of death who is given charge of you shall cause you to die." (32:11)

b) In the case of material bodies, what is commonly called "cause" is not the efficient cause but it is an intermediary or preparing cause which prepares the ground for God's bounty. These causes are materialistic and preparatory requirements for an event to occur, and are sometimes interpreted as the transversal system of causes. So, one can say God is the cause for everything, but He makes everything under certain terms and through certain means, and of course, all these means and ways are the objects made by the Almighty Himself. Sadr al-Din Shirazi explains Muslim philosophers' view in the following way:⁶¹

"Another group of philosophers and some elite among our Imamiah scholars say objects vary in their acceptance of existence from the Origin. Some do not yield to existence unless another being precedes them, in the same way accident should follow substance. Thus, the Creator, whose power is unlimited, grants the existence according to the possibilities through a particular order and in consideration of its various capabilities. Some other directly from Him, some through an intermediary or intermediaries. In the last form, nothing can come into existence unless its means and pre-requisites come into reality. God Himself is the Cause without a cause.

"Requirements for existence are not the result of deficiency in the Almighty's power, but due to weakness in the receiver of emanation. How can one imagine any need or deficiency in the Creator, while means and ways are all originated from Him? Therefore, the Glorious God does not need any help in the creation of anything."

Thus, verses of the following type:

أَفَرَأَيْتُمْ مَا تَحْتُمُونَ أَنْتُمْ تَزْرَعُونَهُ أَمْ نَحْنُ الرَّارِعُونَ لَوْ نَشَاءُ لَجَعَلْنَاهُ حُطَامًا فَظَلْتُمْ تَفَكَّهُونَ إِنَّا
لَمَعْرُومُونَ لَوْ نَحْنُ نَحْنُ مَحْرُومُونَ أَفَرَأَيْتُمُ الْمَاءَ الَّذِي تَشْرَبُونَ إِنَّا أَنْزَلْنَاهُ مِنَ السَّمَاءِ أَمْ نَحْنُ الْمُنزِلُونَ
نَشَاءُ لَجَعَلْنَاهُ أُجَاجًا فَلَوْلَا تَشْكُرُونَ

Have you considered what you saw? Is it you which causes it to grow, or are We the cause of growth? If We pleased, We should have certainly make it broken down into pieces, then would you begin to lament. Surely We are burdened with debt. Nay, We are deprived. Have you considered the water which you drink? Is it you which sends it down from the clouds, or are We the senders? If We pleased, We would have made it salty; why do you not then give thanks?” (56:63 - 70)

which have been used as the basis of reasoning by Imam Fakhr al-Din Razi⁶² in the rejection of the system of cause and effect do not indicate the negation of intermediary means in the occurrence of natural phenomena, but they indicate we should not stop at the channels of emanation and should not remain unaware of the main cause who is the Commander (Ruler) of the whole universe, life giver to all, and He who is at the head of the longitudinal system of all causes, nor should we think these are self-activating. As martyred Dr. Behshti puts it,⁶³

“The fact is the Holy Qur’an wants to guide humans from this end of the cord, i.e. sensible, to the other end of the cord which is Allah. It wants humans not to stop at intermediary causes and fail in reaching the Origin. In all of the verses there is a voice which says, ‘Be alert,’ while you are studying this world, don’t slip into a ditch, take care not to leave the cord, do not drown yourself in the world of matter or contingents... It is true for agriculture you make preparations, which you should, but do not imagine the cord is fully in your hand. Do you not see at times you find a green sapling suddenly dies and fades despite the utmost care and with all the modern and old means which you employ to make it grow?

“Thus you, with all the means which you have at your disposal, are too insignificant to have the end of the cord. It is true you are drinking water which comes down from the clouds, but do not let your keen eye linger on the cloud saying the water in the cloud is pure. The Qur’an says, “It may rain, but the rain might be so badly contaminated or bitter and distasteful one could not drink a drop of it. So, the end of the cord of your drinking water is not in the hand of the cloud, but in the hand of the WISE Omnipotent, Who has created clouds and hundreds of other agents which work under his command and furnish people with fresh, tasty water.”

In the case of miracles, too, considering the invariability of Divine patterns in nature, we do not find it necessary to look for the exceptions in the laws of nature, because if we find a deviation from a natural law, this does not necessarily mean the law is not correct or the law of Causality is violated, because it is possible to make one law ineffective by the help of another in the universe. If a body falls because of the gravity, this force may be neutralized by the use of another force. Therefore, on the observance of a suspended body in the air, we should not immediately suppose there is no

such law as gravitation; rather, we can assume there is another force besides the force of gravity. Martyred Mutahhari puts it,⁶⁴

“Neither do the laws of creation yield themselves to exceptions, nor are miracles exceptional deeds in the laws of creation. If we observe certain changes in the patterns of the universe, it is because of the interference of other patterns or laws, which, too, have general validity under their own special conditions. That is, one law does not change without the effect of another law. In the universe, all the laws, courses and patterns are invariable. If a dead (person) comes back to life, it follows a law of its own, if a son is born without having a father (as in the case of ‘Isa bin Mariam), this, too, is not against Allah’s course or the law of the universe; the problem is people do not know all the patterns and laws of the universe, and what they know as a law, in many cases has the appearance of a law and is not a real one.”

After the appearance of the quantum theory in physics, and the presentation of the principle of uncertainty by W. Heisenberg in the early years of the second quarter of the present century, some of the founders of this theory denied the existence of causal system in the world of particles and permitted the rejection of the principle of determinism, and gave a statistical status of the laws of micro-physics. Most of the physicists, with the exception of some prominent ones like Planck and Einstein, raised their voices in favour of the new theory and more or less accepted its orthodox interpretation, a situation which is still going on, although the lapse of time has increased the number of opponents.

Einstein and his colleagues rejected the theory because they could not accept the probabilities were ruling over the universe. From the viewpoint, the objective of physics should be to explain all natural phenomena according to absolute laws. The reason why we stick to statistical laws, or dealing with innumerable particles make us stick to statistical mathematics for the sake of simplification. As Einstein put it in his lecture in 1933,⁶⁵

“I cannot but confess I attach only a transitory importance to this interpretation. I will believe in the possibility of a model of reality - which is to say, of a theory which represents things themselves and not merely the probability of their occurrence.”

In a letter addressed to Born in April 1924 Einstein wrote, “...I should not want to be forced into abandoning strict causality without defending it more strongly than I have so far. I find the idea quite intolerable in which an electron exposed to radiation should choose of its own free will, not only its moment to jump off, but also its direction. In this case, I would rather be a cobbler, or even an employee in a gaming-house, than a physicist. Certainly my attempts to give tangible form to the quanta have foundered again and again, but I am far from giving up hope. And even if it never works there is always this consolation which lack of success is entirely mine.”

In recent years we come across some Muslim scholars⁶⁶ who have revived the forsaken theory of the Muslim theologians, citing the quantum theory as a proof for their claims. To answer them, we are going to quote Dirak, who was one of the founders of quantum physics. In a recent paper (1979) he said,⁶⁷

“It seems clear the present quantum mechanics is not in its final form. Some further changes will be needed, just about as drastic as the changes which one made in passing from Bohr’s orbits to quantum mechanics. Someday, a new relativistic quantum mechanics will be discovered in which we do not have these infinities occurring at all. It might very well be the new quantum mechanics will have determinism in the way which Einstein wanted.

This determinism will be introduced only at the expense of abandoning some other pre-conception which physicists now hold, and which it is not sensible to try to get at now.

“So under these conditions I think it is very likely, or at any rate quite possible, in the long run, Einstein will turn out to be correct, even though for the time being, physicists have to accept the Bohr probability interpretation - especially if they have examinations in front of them.”

Finally, in confuting those who deny the validity of the principle of causality in the atomic and sub-atomic domain, we say:

a) If we deny the validity of the principle of causality in the atomic and sub-atomic world, this would mean defacing this principle in relation to the whole world, because causality brings the whole world together. As Sheikh Shabistar’i puts it, “If you remove a single particle out of its place, the whole world tumbles down.”

b) The generalization of the results of a limited number of experiments in the form of general laws and scientific theories become meaningful only in the light of the principle of causality, because in accepting something as a law we also accept:

1. every effect has a cause
2. the relation between cause and effect is indispensable
3. similar causes entail similar effects

In practice, no one can be sure of considering all the relevant factors and parameters. Therefore, generalization cannot be of absolute validity. This limitation, however, arises from the deficiency in our information. In any case, we believe faith in the existence of absolute laws can be meaningful only if the principle of uniformity of nature is valid. As Planck puts it,⁶⁸

“Of course it may be said the law of causality is only after all a hypothesis. If it be a hypothesis, it is not a hypothesis like most of the others, but it is a fundamental hypothesis because it is the postulate which is necessary to give sense and meaning to the application of all hypotheses in scientific research. This is because any hypothesis which indicates a definite rule pre-supposes the validity of the principle of causation.”

c) Should the principle of causality turn out to be invalid, nothing would be the result of proof, because the proof is the cause of our knowledge of the desired result, and if the tie between proof and result be non-essential, the proof may not end in the result. In such a case nothing would be the result of proof, and any proof might lead to any result, and there would be no difference between producing a proof and not producing it. This is why even those who reject the principle of causality accept it implicitly, because they admit their proof will undermine our faith in the principle of causality.⁶⁹

d) As Martyred Professor Murtada Murtafari and Martyred Ayatullah Mohammad Baqir Sadr have pointed out,⁷⁰ the impossibility of prediction in atomic domain arises from our ignorance about the deterministic laws governing atomic phenomena rather than ineffectiveness of the principle of causality and its corollaries in the atomic world. This in itself is due either to the deficiency in the means of experimentation or due to the immeasurability of the effects of the experimentalist on the experiments. In any case, we should note our failure in the discovery of a cause does not mean its non-existence, and we have no proof to say modern science has discovered all the factors therein. As Einstein puts it,⁷¹

“Therefore, the fact in science we have to be content with an incomplete picture of the physical universe is not due to the nature of the universe itself but rather to us.”

In short, the denial of the principle of causality is the denial of scientific laws as well as the negation of reasoning. Science has to accept the principle of causality with all its inseparable corollaries, so its existence could be meaningful.

Notes

1. Kulayni, al-Kafi, vol. 2, p. 34.
2. Harrani, Tuhaf al-Uqul, p. 354.
3. al-Raghib al-Isfahani, Mufradat Alfaz al-Qur'an.
4. Sadr al-Din Shirazi, Asfar, vol. 3, p. 516.
5. Kulayni, al-Kafi, vol. 1, p. 29.
6. Mufid al-Irshad, p. 281.
7. M. Bagir Majlisi, Bihar al-Anwar, vol 3. pp. 146 - 147.
8. ALi Muttaqi, Kanz al-'Ummal, no. 1220.
9. Fakhr al-Din Razi, al-Tafsir al-Kabir, vol. 17, p., 209.
10. Of course, if somebody wants to refer to the analysis of what has been seen (or heard) as the eyes (or ears) of the heart, we will not argue with him against his terminology.
11. M. H. Tabataba'i, al-Mizan, vol. 10, p. 68 and vol. 16, p. 167.
12. Nahj al-Balagha (S. al-Saleh Ed) p. 213.
13. M. Baqir, Majlisi, Bihar al-Anwar vol. 3, pp. 159.
14. Abu Hassan Nadwi, Islam and the World (Malaysia, 1401 A.H.) p. 95; Mohammad Iqbal, The Reconstruction of Religious Thought in Islam, (Lahore, 1960) pp. 127 - 131; A. Tabbarah, Ruh al-Din al-Islami, (Beirut) p. 270.
15. M. Mutahhari, 'Ilal-e-Garayesh bi-Maddigari (Hekmat Pub.) p. 191.
16. Einstein, A Centenary Volume, Edited by A. P. French, pp. 312 - 313.
17. Werner Heisenberg, Physics and Beyond, Harper-Torchbooks, p. 63.
18. Philip Franck, Einstein: His Life and Times, trans. George Rosen (New York, 1970), pp. 214 - 218.
19. Sadr al-Din Shirazi, Asfar, vol. 3, p. 384.
20. M. H. Tabataba'i, al-Mizan, vol. 3, p. 384.
21. al-Raghib al-Isfahani, Mufradat Alfaz al-Qur'an.
22. M.J. Mughniyah, al-Tafsir al-Kashif, vol. 6, p. 534.
23. Ibn Sina, al-Isharat Waal-Tanbihat, vol. 2, p. 358.
24. Ibid, vol. 2, p. 353.
25. Ibid, p.359.
26. Alexis Carrel, Man, the Unknown, p. 85.
27. M.H. Tabataba'i, al-Mizan, vol. 7, pp. 289 - 290.
28. Ibid, vol. 8, p. 348.
29. M. J. Mughniyah, al-Tafsir al-Kashif, vol. 3, p. 213.
30. Din Arkan Tabiah, p. 251.
31. Abu Hamid al-Ghazali, Ihya 'Ulum al-Din vol. 3. p. 15.
32. M. H. Tabataba'i, al-Mizan, vol. 5, p. 270.

33. Abu Hamid al-Ghazali, *Ihya 'Ulum al-Din*, vol. 3, p. 9; Mullah Muhsin Fayd Kashani, *Mahajjah al-Baida*, vol. 2, p. 125.
34. 'Amidi, *Ghurur al-Hikam wa Durar al-Kalim* vol. 5, p. 411.
35. Kulayni, *al-Kafi*, vol. 2, p. 263. For other versions of the same tradition, see also al-Bukhari, *al-Sahih*, vol. 8, p. 105, and Fayd Kashani, *Kalimat-e-Maknunah*, p. 113.
36. Saduq, *'Uyun Akhbar al-Rida*, vol. 2, p. 69. For other versions of this tradition see, e.g. Suyuti, *al-Jami al-Saghir* (Damascus) vol. 2, p. 483, and Fayd Kashani, *Kalimat-e-Maknunah*, p. 247.
37. *Nahj al-Balaghah* (S. al-Salah Ed.) p. 337.
38. *Ibid*, p. 497.
39. M. H. Tabataba'i, *al-Mizan*, vol. 2, p. 250.
40. Abu Hamid al-Ghu7zzali, *Ihya 'Ulum al-Din*, vol. 3, pp. 12 - 14.
41. Saduq, *al-Khisal*, vol. 1, p. 151.
42. 'Amidi, *Ghurur al-Hikam wa Durar al-Kalim* (Tehran University Press) vol. 1, p. 68.
43. *Nahj al-Balaghah* (S. al-Saleh Ed.) p. 524.
44. Ibn Abi Jumhur, *Ghawali al-La'ali*, vol. 1, p. 240. In Suyuti's *al-Jami' al-Saghir*, (vol. 1, p. 500), this tradition is reported in the following form:
45. *Nahj al-Balaghah* (s. al-Saleh Ed.) p. 524.
46. *Ibid*. p. 503.
47. Saduq, *al-Khisal*, vol. 1, p. 85. See also Suyuti, *al-Jami' al-Saghir*, vol. 1, p. 469.
48. Amidi, *Ghurur al-Hikam wa Durar al-Kalim*, vol. 1, p. 189.
49. Barqi, *al-Mahasin*, vol. 1, p. 215.
50. Amidi, *Ghurur al-Hikam wa Durar al-Kalim*, vol. 1, p. 231.
51. Saduq, *Uyun Akhbar al-Rida*, vol. 2, p. 46.
52. Kulayni, *al-Kafi*, vol. 1, p. 43.
53. Ibn Sina, *al-Isharat wa al-Tanbihat*, vol. 13, p. 246.
54. Einstein, *A centenary Volume*, Edited by A.P. French, p. 275.
55. *Ideas and Opinions by Albert Einstein*, Trans. Sonja Bargman New York, Crown Publications, Inc. p. 266.
56. M.H. Tabataba'i, *al-Mizan*, vol. 1, pp. 45 - 46.
57. Sayyid Qutb, *Fi Zilal al- Qur'an*, vol. 1, p. 40.
58. M.H. Tabataba'i, *Usul e-Falsafah*, vol. 3, p. 183.
59. Abu Hamid Ghazali, *Tabafut al-Falasifah*, pp. 234 - 240.
60. M.H. Tabataba'i, *al-Mizan*, vol. 7, p. 298.
61. Abu Hamid Ghazali, *Tabafut al-Falasifah*, pp. 234 - 240.
62. Fakhr al-Din Razi, *Tafsir al-Kabir*, vol. 2, pp. 110 - 111; vol. 14 pp. 194 - 195, vol. 30, p. 53; Sadr al-Din Shirazi, *Asfar* vol. 9, pp. 153 - 158.
63. M. H. Beheshti, *Guftar e-Mah* vol. 3, p. 114.
64. Murtada Mutahhari, *'Adal e-Ilahi*, p. 62.
65. Einstein, *A Centenary Volume*, Edited by A.P. French, p. 314.
66. Dr. Ismail R. al-Faruqi, *The Causal and Telic Nature of the Universe*, paper presented at the International Conference on Science in Islamic Polity, Nov. 1983. Fateh Ullah Khan, *God, Universe, and Man* (Lahore, Wajidalis Limited, 1982) pp. 251 - 267.
67. *Some Strangeness in the Proportion*, edited by Harry Woolf (Addison - Wesley Publication Co.) p. 65.
68. Max Planck, *The New Science* (Greenwich Editions, 1954), p. 104.
69. Ibn Rushd, *Tahafut al-Tahafut*, translated by S. Van den Bergh (London, 1954), pp. 319 - 319; M. Babir, *Sadr, Falsafatuna* (Beirut, 1400 A.H.), pp. 308 - 309; M. H. Tabataba'i *Usul e-Falsafah*, vol. 3, p. 217 (Mutahhari's footnote).
70. M. H. Tabataba'i, *Usul 3-Falsafah* vol. 3. p. 218 (Mutahhari's footnote); M. Bagir, *Sadr, Falsafatuna*, pp. 314 - 315.
71. Max Planck, *The New Science* (Greenwich ed., 1959) p. 10.

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