

History of Islam

An encyclopedia of Islamic history

Science As the Servant of Faith

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Summary: The pursuit of the sciences is obligatory on humankind. Science and faith are not incompatible. They are both in search of the Truth. Science concerns itself with the physical and seeks its validation in observation and reason. The domain of faith has many more dimensions. It embraces both the physical and the spiritual. Where faith intersects and interacts with the physical, it must also seek its validation in observation and reason.

Religion is not just dogma as many people assume it to be. It is also a way of relating to creation. The conceptual structure of this relationship has given humankind some of the most basic scientific ideas.

Disagreements between science and faith emerge when scientists forget the assumptions upon which they base their world view and when people of faith discard empirical and rational evidence and assert their beliefs as dogma.

Science is not the privilege only of the West. Every civilization has produced great men and women of science. The center of gravity of scientific endeavor is now shifting to Asia. For a thousand years Muslims dominated the world of science. This shows that the reasons for the decay of science in Muslim lands are not religious but social, historical and political.

Man is a Trustee of God on earth. The discharge of the Divine Trust requires a profound understanding of nature and of the interdependence of man and nature. Muslims must recreate that integrated vision of knowledge that combines the sciences of nature and history with the sciences of the Qur'an and spiritual insights into the soul. The separation of the sacred and profane has no place in Islam. Nature is suffused with the Signs of God. Indeed, science is a servant of faith and supports it.

Several questions are addressed in this brief article:

1. Is science compatible with faith?
2. How is history related to natural science?
3. Isn't science the product of western rational thought while the societies of the east have been mired in religious superstition?

The ultimate goal of science and faith is the same: to find the Truth. Science and faith are not incompatible. Indeed, a search for truth through the scientific method reinforces faith.

The apparent contradictions between science and faith arise from an insufficient understanding of both. The scientific method is inductive. This means that it is based upon observation and reason. A scientist observes nature, interacts with it, measures and analyses it, and builds simplified models to extrapolate his observations. These models are a powerful tool with which humankind attempts to comprehend the complexity that surrounds it. In addition, man uses his understanding of natural laws to control and exploit nature for his own benefit.

The scientific method is not deductive, although deductive logic is used to extrapolate models of behavior that are built up using the inductive method. A physical model must be validated through observation. Otherwise, it remains speculative and theoretical.

True faith is also inductive. This means that it is supported by observation and reason. Faith is not deductive or a product of philosophical speculations. Faith supported by observation and reason is on a solid footing and elevates humankind towards the Truth.

We offer some perspectives to elaborate on our assertions.

The interconnectivity of man with nature

“Whatever is in the heavens and the earth ask of Him,

Every moment, He (reveals His beautiful Names) with majesty”

The Qur’an (55:29)

Some religious traditions, even though they do not believe in God, assert the interconnectivity of creation. Mahayana Buddhism is an example. The Qur’an asserts this interconnectivity through God. Man and nature are not independent of each other; they are connected through Divine Grace which manifests itself through nature and through history.

“We shall show them Our Signs

On the horizon (in nature and in history)

**And within their own souls,
them**

Until it is clear to

That it is indeed the Truth.” (The Qur’an, 41:53)

The same view is expressed in quantum mechanics. It has been experimentally demonstrated that when a particle is observed, it changes its nature. In other words, the universe that man lives in is a knowing, breathing universe, animated by Divine Grace. It talks to man. It is not a dumb universe.

In contrast to quantum mechanics, classical mechanics takes the position that man and the universe are subject and object. In other words, man as the subject is separated from nature which is the object of his observation. This is called the Principle of Objectivation.

Every world view is colored by its own assumptions. If you wear red glasses, the world looks red. The Principle of Objectivation separates man from nature and results in disastrous consequences for his world view. By assuming that nature is separate from him, man finds that nature is devoid of those human qualities that make it beautiful. Let us look at an example.

Consider the rainbow. Whether it is a highly trained person from a scientific academy or an unlettered person, they will both agree that the rainbow is beautiful. Ask a physicist to explain the rainbow. His explanation will proceed along the following lines: Sunlight consists of electromagnetic waves of different wavelengths. In the visible spectrum, these wavelengths occupy a space from approximately 0.5 micrometers to 0.7 micrometers. When these waves pass through moisture laden air, they are refracted, that is, they bend. The degree of refraction depends on the wavelength. After refraction, they are projected on the horizon as a rainbow which has multiple colors.

Observe this objective explanation. The wavelengths and refraction are there. But where in this explanation is that enchanting rainbow as it vaults the sky from horizon to horizon? It is not there in the objective explanation because the Principle of Objectivation has separated the Self (the subject) from the rainbow (the object).

By contrast, a man of true faith will carry the observation of the rainbow one step further. He knows through his faith that he and the rainbow are interconnected through Divine Grace. He does observe and measure, as does the scientist, but he does not stop at wavelengths and refraction. He looks upon the natural phenomenon as a Sign that projects the beauty of the Divine Name onto his own soul. The color is not in the wavelengths and refraction. The color is in the soul. The rainbow is beautiful because the soul has a sense of beauty bestowed upon it and nature reflects that beauty.

By the soul

And its (sense of) order and proportion.

(The Qur'an, 91:7)

This example brings out the difference between blind faith and faith based upon observation and reason. A blind man can also believe but is his belief the same as the faith of a man who can see and witness? A deaf man can believe but is his faith the same as the faith of a man who hears and reinforces his faith?

Nature offers an infinite variety of Signs. A person of knowledge and faith not only validates his theories by observing these Signs but also reinforces his faith and uses it as an occasion to contemplate the mystery of creation and the purpose behind it. An ignorant believer does not observe or reason; he merely believes. A disbelieving scientist stops at observation and reason and does not concern himself with issues that make life beautiful. Whose faith is stronger? The Qur'an offers an insight:

"Is one who is blind (to realities of the invisible world)

The equal of one who can see (with his inner eye)?"

Will you not then reflect? (The Qur'an, 6:50).

The Deductive Method is insufficient to know the Truth

At the other extreme, the deductive method leads to an impasse in knowing the Truth because it assumes the Principle of Before and After. The classical example is offered by the question: What came first, the chicken or the egg?

The deductive method fails because it falls into the time trap. Is time real? What is time? In our ordinary existence, we live by clock time. But when we debate the questions of Truth, time itself becomes the subject of discussion. Scientists recognize clock time, relative time, perceived time, timeless time, time as

quanta of energy and so on. The Qur'an specifically mentions clock time (103:1), relative time (70:4), perceived time (87:16) and timeless time (76:1). The time frame in which an issue is discussed has an outcome on the deduction.

Here is an example from history: In the eighth century CE, the Mutazalites, Muslim philosophers who had adopted the Greek rational approach, fell into the trap of the deductive method. For almost a hundred years (765 to 846 CE) they were the darling of the Abbasid courts in Baghdad. But they tried to apply their rational methods based on logic to God and His Word and fell flat on their faces. Arguing that God and His Word cannot be same because that would compromise the transcendence of God (in their view), they separated God from His Word. To preserve that transcendence (as they perceived it), they came to the absurd conclusion that the Word of God was created in time. This was a classical trap wherein the assumption of before and after, and of time in its clock sense was applied to an issue that was beyond time. How can you apply the measure of time to the Creator of time? The reaction from the *ulema*, led by Imam Ahmad bin Hanbal, was furious. The Mutazalites were discredited and expelled from the Abbasid courts.

No! This is the magnificent Qur'an,

From a Tablet, secure. (85:21)

It was after the deductive approach was abandoned that the inductive method based on observation and measurement flourished in the Islamic world. And the Muslims went on to dominate the world of science for a thousand years.

Some scientists make the error of not stating the assumptions upon which their theories are founded, or worse yet, overlooking these assumptions and stating their theories as if they are the absolute truth. The Big Bang Theory and the Theory of Evolution both fall into this category. Those who champion these theories must be aware of the assumptions underlying these theories.

The interrelationship of the laws of natural science, history and the soul

There is an inherent relationship between the laws that govern the physical universe and human history as well as the individual soul. The Qur'an expresses it thus:

And the heavens has He raised High,

And established (dynamic) equilibrium (justice and balance) therein,

So that you do not violate justice (in your own lives). The Qur'an (55:7-8)

Justice (balance, equilibrium) is the common denominator that binds nature to the world of man. There is a dynamic balance in nature which makes it possible to understand it and express it in mathematical language. For instance, it is astonishing that the seemingly complex physical behavior of natural phenomenon can be expressed through differential equations in mathematics and physics. The same laws of balance, proportion and equilibrium apply individually to the soul and collectively to sociology and history. *When human beings violate justice, they destroy themselves. The just mean is the law of life. Similarly, a civilization that overextends itself and violates justice is doomed.* Whether it is over cultivation of land, over exploitation of resources or imperial overreach, the result is the same. The Qur'an expresses it as follows:

Behold! Many were the (historical) events

That have transpired before you.

So, travel through the earth,

And observe what was the fate of those

Who gave the lie (to the Truth) (The Qur'an, 3:37)

The edifice of faith is supported by three pillars: the sciences of the soul, the sciences of nature and the sciences of man, sociology and *tasawwuf* (spiritual dimension of Islam). The sciences of nature and of man are called *Ilm al Ibara*. These include mathematics, logic, physics, chemistry, biology, history and sociology. Those of the soul are called *Ilm al Ishara*. These are the sciences of *tasawwuf*. The unity of knowledge dictates that the Source of all knowledge is One and both *Ilm al Ibara* and *Ilm al Ishara* are Signs to the transcendent.

Thus faith is reinforced by the sciences of nature, the sciences of history and the sciences of the soul. They are interrelated in as much as the laws of nature, of history and of society have a common origin in Divine Grace.

Nature, History and the Soul as Divine Signs

For reasons that are rooted in history, science has become secular, devoid of human qualities. In the world of science, there is no color and no music, only wavelengths. This happened because in the eleventh century, as the scientific method travelled from the Middle East and Spain into Europe, the Latin west was faced with the challenge of reconciling its dogma with the empirical and rational. Difficulties were enormous. It was therefore decided to separate science from faith, church from state. Scientific inquiry, free from the fetters of irrational dogma took off and has reached its current zenith. But the price that was paid was enormous. Science was cut off from the soul and became merely a tool for exploiting nature.

The genii of science can be put back in the bottle by affirming that nature and history are Divine Signs. Just as there are Divine Signs in nature and in the world of man, there are Signs within the soul. Man and nature are both beholden to the Divine, and the connectivity of natural science and human history with the soul is reestablished.

There are Signs in the alteration of the day and the night, in the creation of animals of all kinds, in the birds that fly, in the winds that carry aloft the clouds, in the rain that gives life to a dead earth and in the creation of man.

Similarly, there are Signs in the history of man. Divine mercy has established justice as the arbitrator of human affairs. When man violates justice he destroys himself. Such destruction can come from within as an implosion of a society or from without as an invasion.

The soul is the mirror of the visible and the invisible worlds. The physical attributes that find their expression are processed in the soul. Color, shape, form and beauty are attributes of the soul. So is justice and a sense of right and wrong. The Prophet said:

“Man ‘Arafa nafsahu, faqad ‘arafa rabbahu”

(He who knows his own soul, knows his Creator and Sustainer).

The soul, nature and history create a triad of integrated knowledge which together invite man to observe, experiment, understand, reflect and strive towards higher horizons.

“God is the Light of the heavens and the earth”, declares the Quran. The same Light animates nature, history and the soul of man. Looked at from this perspective, science becomes a servant of faith, and faith a servant of service and worship.

There are numerous Signs enumerated in the Qur’an. For those who would like to research further, a reference index is provided as an appendix.

The purpose of Creation:

One of the consequences of the separation of the soul from nature is that man finds himself all alone in the universe, disconnected from his surroundings, without purpose. Faith not only reconnects man to his surroundings but offers him a purpose and a destiny.

The Qur’an declares:

“I created not the Jinns and humankind except that they serve (worship) Me” (The Qur’an, 51:56)

A Hadith e Qudsi (Divinely inspired Hadith) declares:

“I was an unknown treasure;

I willed that I be known.

Therefore, I created”.

There is a purpose to the creation of man, and that is, to know, serve and worship Him. Thus knowledge and service are obligatory for humankind. To be alive is to know God through His Signs and to serve Him.

Divine Mercy does not leave humankind without the Signs to find Him. Nature and the rise and fall of civilizations are Signs through which humankind can confirm and reinforce its faith.

Man and nature are interconnected: man is the knower and nature is the means for knowing.

Religion: the Incubator of Basic Scientific Ideas

Religion is not all dogma as many people assume it to be. It is also a way of relating to creation. The conceptual structure of this relationship has given humankind some of the most basic scientific ideas.

Take the concept of zero. It is agreed that the Mayans and ancient Indians independently came up with the concept of zero. Both civilizations took a cyclic view of the cosmos, of birth, death and resurrection. In this cyclic view of life, as an event passes from life to death, there is necessarily a moment of suspension when it is neither alive nor dead. This is the moment of nothingness, or su-na-ya in Sanskrit. When the idea passed onto the Muslims it became sa-fa-ra or cipher. Then, as it traveled further west into Latin Europe in the eleventh century, it became zero.

Many civilizations claim the idea of infinity. The Greeks and the ancient Indians understood it in the abstract. The most concrete description of infinity is to be found in the works of the Muslim scholar Nasiruddin al Tusi (d1273). He took his inspiration from the Qur’anic verse:

“Indeed, We have granted you without limit (boundless).” The Qur’an (108:1)

The idea of boundlessness led him to the idea of infinity and his discovery of the Tusi Couple (two opposing forces that do not intersect).

Great Scientists from centuries bygone

Science is not the exclusive privilege of the west. Every civilization has produced its share of great ideas and great scientists. In the Islamic perspective, all knowledge is a manifestation of Tawhid (Unity of God). This unity manifests itself through His Names which have been taught to humankind.

“And He taught Adam all the Names”, (The Qur’an 2:31)

Nature, as the stage upon which God manifests His grace, takes on a nobility which man is charged to study, cultivate and preserve as God’s *Khalifa* (trustee) on earth.

The modern scientific method was invented by the Muslims after their experimentation with and rejection of Greek philosophy during the Mutazalite period (765-846 CE). Alhazen (d 1040) is generally considered the father of the scientific method. The classical Islamic scientists took their cue from the Qur’an which directs men and women of faith to observe nature and be a witness to the Signs of Divine presence:

**“Lo! In the alteration of the night and the day,
And in what Allah has created in the heavens and the earth,
Are Signs for a people who are conscious of the Divine.” The Qur’an (10:6)**

Many are the scholars from every civilization who have contributed to the development of scientific ideas. The names of some of the universally acknowledged men of science from the Islamic tradition are given below. What is important is to note that these scholars were at the same time men of faith and well versed in the religious disciplines. They were al Hakims (men of wisdom) who had mastered physics, mathematics, astronomy, grammar, the languages (Arabic, Farsi, Greek), logic, philosophy, Qur’an, Hadith and *tasawwuf* (the spiritual dimension of Islam). This is what distinguishes a scientist with faith from a secular scientist. The former takes a holistic, integrated view of creation; the latter segments knowledge into disconnected compartments.

- oo Jabir Ibn Hayyun (d 815) was the inventor of Chemistry.
- oo Al Kindi (d 873) is widely credited with inventing the scientific empirical method along with Al Hazen.
- oo Al Khwarizmi (d 863) was the father of Algebra and the inventor of algorithms that are widely used in software development.
- oo Al Masudi (d 956) was an outstanding historian and the first to use the empirical method in history.
- oo Al Farabi (d 850 CE) was a master of logic and one who systematically documented the limits of each of the sciences.
- oo Ibn Sina (d 1037) was the greatest physician of his age. His book *Canon of Medicine* was used as the standard medical textbook in Europe until the seventeenth century.
- oo Al Hazen (d 1040) was the father of modern optics.
- oo Al Baruni (d 1051 CE) was the inventor of historiography and a master astronomer and geographer.
- oo Al Tusi (d 1274 CE) was the inventor of the Tusi couple and the builder of a famous observatory in Maraga, Azerbaijan which was a part of ancient Persia.
- oo Ibn Rushd (d 1198) was the greatest philosopher after Aristotle.

- Ibn Khaldun (d 1406 CE) is widely recognized as the father of modern historiography and sociology. His *Muqaddama* was the first attempt to formulate the laws that govern the rise and fall of civilizations.
- Muammar Sinan (d 1588 CE), one of world's great architects built more than a hundred mosques and schools, the best known of which are the Suleymaniya mosques in Istanbul and Edirne.
- Ustad Ahmed Lahori (d 1645 CE ?) was the architect of the Taj Mahal, the most refined structure the world has known and a monument to love.

Ask and You Shall Find

“Ask about it from the One Who knows” The Qur’an (25:59)

The common denominator of all scientific endeavors is an inquiring mind. One must ask before nature reveals its secrets.

Every scientific field has its own assumptions, its principles, its knowledge base, its approach, its methodology and its limits. One who engages in scientific inquiry spends years acquiring the knowledge, getting trained in the methods, and learning the principles as well the limits of his discipline..

Islam emphasizes not just the importance of acquiring knowledge but the need for a disciplined, sustained struggle in its pursuit. The Prophet said: “Pursue knowledge even if you have to go to China to acquire it”. China, in those days, was an alien land, far, far away. This edict commands the believers to acquire knowledge even if comes from a culture or a country that is alien to your own. The importance of asking is emphasized in the Qur’an again and again.

In the secular perspective, nature is an unwilling antagonist, the secrets of which need to be pried open, by force if necessary. In the Qur’anic perspective, man and nature are related through God. That is the essence of Tawhid. A disbelieving scientist asks: What is the law of nature? A believing scientist asks: What are the Divine laws that govern nature? The disbeliever questions while the believer asks.

The importance of discipline is inherent in the *Shariah*. The discipline of prayer enhances focus. The discipline of charity furthers the common good. The discipline of fasting promotes self control. The discipline of hajj proclaims the brotherhood and sisterhood of man.

Muslims fell behind in the scientific pursuits because they stopped asking. They took a passive, fatalistic approach to the laws of nature and were content to sleep in their ignorance. They stopped asking and nature stopped revealing its secrets to them. Lethargy set in. Civilizational decay took over.

Man as the Trustee on Earth

The Qur’an asserts that man was created as the custodian of the Divine Trust on earth, to know, serve and worship Him:

**(Recall) When your Rabb (Creator, Sustainer and Cherisher) said to the Angels:
“I shall indeed place on earth a Trustee”. (The Qur’an, 2: 30)**

The Qur’an presents man as the Divine trustee, responsible for his own actions, with authority to manage the resources of the earth in accordance with Divine commands. Man is not an antagonist to nature as he is construed by modern man who exploits the earth with unbridled greed. In the Qur’an, nature, and all it has to offer, is a Divine trust that must be used only to know, serve and worship God.

Protection of the environment is not just a legal obligation mandated by human authority but is a responsibility decreed by God. The resources of the earth, the environment, the air and the water, the plants, the animals and the minerals are gifts so that man may use them with balance, proportion and justice to create Divine patterns on God's earth.

The discharge of the Divine Trust requires a profound understanding of nature and of the interdependence of man and nature. Muslims must recreate that integrated vision of knowledge that combines the sciences of nature and history with the sciences of the Qur'an and the prophetic Sunnah. The separation of the sacred and profane has no place in Islam. Nature is suffused with the Signs of God. Indeed, science is a servant of faith and supports it.

References from the Qur'an

Divine Signs in nature: 2:29; 3:190; 6:38; 6:95; 6:97; 6:99; 6:101; 10:5-6; 10:31; 10:101; 13:2-4; 13:65; 15:16; 16:10-16; 20:50; 24:41; 29:19; 30:11; 31:28; 50:6; 51:20-21; 78:6-7; 87:2

Divine Signs in history: 3:137 (<http://www.islamicity.com/mosque/QURAN/3.htm#137>); 6:6; 6:42; 12:110-111 (<http://www.islamicity.com/mosque/QURAN/12.htm#110>); 14:5 (<http://www.islamicity.com/mosque/QURAN/14.htm#5>); 29:20

Divine Signs in the Soul: 2:48; 2:123; 2:231; 2:233; 2:272; 2:281; 2:286; 3:25; 3:30; 3:39; 3:63; 3:161; 4:1; 4:84; 4:110; 4:111; 4:128; 5:116; 6:70; 6:104; 6:152; 6:164; 7:42; 7:188; 7:189; 7:205; 10:30; 10:54; 10:100; 10:108; 12:23; 12:26; 12:30; 12:32; 12:51; 12:53; 12:68; 12:77; 13:33; 13:42; 14:51; 16:111; 17:14; 18:28; 18:35; 18:74; 20:15; 20:15; 20:67; 21:35; 21:47; 23:62; 26:3; 27:40; 27:44; 27:92; 28:16; 29:6; 31:12; 31:28; 31:34; 32:13; 33:37; 35:8; 35:18; 35:36; 36:54; 39:41; 39:42; 39:70; 40:17; 41:46; 45:22; 47:38; 48:10; 50:16; 50:21; 59:18; 64:11; 64:16; 65:2; 65:7; 74:38; 75:14; 75:26; 81:14; 82:5; 82:19; 86:4; 89:27; 91:7

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