

Islamization of Modern Science and Technology

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Introduction

Islamization of modern empirical knowledge is in fact an effort to assimilate this knowledge in an Islamic framework with a view to use this knowledge for the greater good of the Muslim society. It is an attempt to understand and perhaps adopt all that is good in this knowledge by integrating it with traditional Islamic knowledge. The question, arises however, arises as to how this can be done, particularly in the case of sciences. For instance, how should science be taught and learned as a part of an Islamic curriculum in Muslim educational institutions from grade schools to the universities. And what methodology should be used and what procedure adopted in planning a course of instruction in science? How do we establish the relevance of Islamic knowledge to contemporary scientific progress, and what parameters need to be identified and studied to bring this change? The problem has to be looked at from a total perspective, namely, the present scene, past achievements, immediate problems, and strategy of action.

I. The Present Scene

The World of Islam is facing today a constant challenge from the industrialized countries. Partly due to the strategic location of the Muslim world and their wealth of men and material and partly because of accumulated religious prejudices, the belt of Muslim countries has become an arena of heightened power play, rivalries, and conflicts. Border conflicts in different regions are often masterminded to create ready markets for arms and ammunition in order to keep these countries engaged and occupied so that their progress and develop-

ment is slowed down and they remain under the constant subjugation and influence of the advanced nations.

In many Muslim countries the colonial rulers have left behind a pattern of social organization characterized by sharp dichotomy. There exists in every Muslim country a miniscule modernized sector, which enjoys a high standard of living, side by side with a large traditional sector subject to extreme poverty, malnutrition, disease, and ignorance. The modernized sector, by virtue of its vested interests, generally collaborates with the affluent industrialized world in perpetuating the global system of unequal relations and economic exploitation. This sector has its affiliations and loyalties outside the country. It does not identify itself with the masses; it is always afraid and apprehensive of the majority. For its very survival it plays a game of hide and seek in the body politics of the country, which results in the political instability and economic uncertainty of these countries. Both the external and internal situations thus tend to perpetuate economic inequity and socio-political unrest and thereby generates conflict within the Muslim countries.

The laws of nature, however, follow their own course. History is taking a turn. Today with the grace of the Almighty, the Muslim world is spearheading a global reassertion of the dignity of man everywhere. It is reassuring to witness a revival and upsurge of that old spirit of scientific enquiry in the world of Islam which had once shaken the entire world during the early centuries of the present era. It is heartening to see that in all the Muslim countries of the world there is so much enthusiasm and determination to forge ahead in developing science and technology and applying it to improve the condition of life and living in Muslim society.

But the Muslim communities throughout the world are very restive and impatient. They want to turn the pages of history immediately. They are eager to reverse the process of economic domination, political exploitation, and social and intellectual subservience, which they have suffered over centuries under the colonial influence and alien power. They are very keen and desperately trying to rediscover and restore the old spirit and glory of Islam and recover their destiny in this new and increasingly complex civilization.

The Islamic world today constitutes nearly one fifth of the humanity inhabiting the globe. Extending from Senegal to Indonesia, the Muslim world occupies the middle belt of the globe and assumes a position of strategic importance. It has tremendous economic attributes and is richly endowed with natural resources. It produces nearly 50 per cent of the world's oil and accounts for 40 per cent of world's export of raw materials. Furthermore, the inherent resilience of Islam is now triggering a thundering resurgence, producing tremendous motivational force and enthusiasm for greater cooperation and collaboration within the entire Muslim *Ummah* and for speedier progress and development of the Islamic world. This is indeed a great turning

point in our history. The Muslim society is again acquiring renewed strength from its faith and from the religion that once placed them on the top of the world.

II. The Islamic World View

The first five centuries of the present *hijrī* era, i.e., from the eighth to the twelfth century A.C., was a period of Islamic glory. It was a period of phenomenal rise and remarkable achievements in Muslim thinking and understanding. During this period Muslims developed a great thirst for learning, a craving the like of which history had never known before. Islamic civilization reached its zenith and Muslims became world leaders in philosophical and scientific thought. It was, however, in the field of natural sciences that they made the most obvious advances and achieved their greatest triumphs. These crowning successes were largely due to the tremendous ideological motivation provided by Islam for the study of natural phenomena and the pursuit of empirical knowledge.

In the period of their ascendancy, the Muslim scholars and scientists firmly believed, in conformity with their faith and religion, in the oneness of Allah, the unity of the universe, the unity of all mankind, and the infallibility of the Divine Law. All knowledge according to them was a confirmation of Divine unity and purpose. In fact, in Islam there is no science for the sake of science and there is no knowledge for the sake of knowledge. Everything is for an end, which is using scientific knowledge for the good of humanity at large. The Islamic approach toward the cultivation of knowledge has always been holistic and integrated. Therefore the Muslim scientists, in their golden era, were always guided by a moral zeal and consequently were not oriented or disposed toward its deployment of scientific knowledge for exploitative destructive ends. In Islam, the responsibilities of a person who knows and who can observe and think for himself have been laid down as greater than those of someone who does not know and who cannot contemplate. Therefore the responsibilities of a scientist, who is trained to be both knowledgeable, as well as observant and rational, are far greater than the ordinary citizen in preserving peace and harmony and leaving a happy world for his progeny and for posterity.

The renaissance of science and learning in Europe was accompanied by a separation of the religious and the secular, due to the peculiar conditions then prevailing. This value-neutral framework of science has over the years led to moral relativism and ethical anarchy. Knowledge has increasingly come to perform a utilitarian function. The ends of knowledge are determined largely by the prevalent and dominant distribution of societal power. Knowledge and

science have become a means toward the continued pursuit of whatever aims are deemed appropriate by those with the greatest influence, prestige, and control. They are a major tool for social manipulation and the service of profit. Modern science, mistakenly based on the separation of the secular from the religious, has been cut off from its moral moorings. The world needs to rethink the assumptions that led to the creation of this value-neutral framework. The highly integrated and holistic framework of Islamic science provides an alternative model, which permitted the growth of science and learning while protecting society from its misuse.

Science is a cultural phenomenon and Western science reflects the worldview of Western societies. At the zenith of its civilization and scientific achievement, Islam produced its own unique culture and tradition of science. It developed a mold of science and knowledge that progressed and flourished under the paradigm of belief in divine, unity the unity of universe and reflected the Islamic value system. Islam integrates the sacred and the temporal. The application of knowledge and science in Islam is for beneficent ends and in harmony with the purposes of the Creator. Consequently, knowledge was not considered an end in itself; it was a means for the attainment of higher moral and spiritual goals. Unlike modern science, there is no dehumanization, abstraction, or alienation in Islamic science. On the other hand, the early conflict between science and the church has led Western science to arrogate to itself an exclusive prerogative to apprehend truth and reality, thus reducing man's capability to develop an integrated appreciation of reality and react to it rationally and holistically. Modern man therefore stands disoriented by a total lack of value and purpose. The assumptions of value-neutrality in science, adopted by the West, as a result of the conflict between the Church and science, has brought mankind to the brink of destruction and needs to be re-examined from a correct historical and rational perspective.

III. The Progress of Knowledge

There have been three important periods in human history when empirical knowledge and science took a quantum jump in the world. These three periods are distinct from each other in their philosophy, time framework, methodology, and developmental pattern. These periods are: (i) Hindu and Greek civilizations, (ii) the Islamic civilization, and (iii), the modern Western civilization. In the early Greek period, no doubt, some important discoveries were made, but science grew and progressed in an atmosphere of superstition and fear. The methodology adopted was not systematic and the development was sporadic and lopsided. There was little public patronage for science. More often it followed individual fancy and enterprise. But it must be recognized that some remarkable achievements were made during that period.

On the other hand the inspiration, the conscience, and the morality given by Islam for the acquisition, dissemination, and advancement of knowledge is not only well known but is now universally recognized. History is witness to the fact that Muslim philosophical thought and scientific knowledge in its golden period had essentially a moral and religious base. The entire scientific effort was devoted toward understanding natural phenomena, opening new frontiers of knowledge, discovering hidden resources, and developing new processes for the welfare and well-being of humanity at large. This moral was peace and prosperity through science, and not the war and destruction we see today.

In contrast to this, the enormous physical progress that has been achieved in the modern world today through science and technology has brought in its wake, an oppressive and inequitable world order. There is strife, convulsion and tension all over the world. Scientific progress and technological advancement has produced a value-neutral society with an amoral base. There is a decline of authority at all levels, a disruption of the family, and a lack of social harmony. The secular nature of education has perpetrated a philosophy of anarchy and arrogance in the social behavior. Thus the development of science has been influenced by its social and intellectual milieu, which in turn grows out of the moral and religious environment.

Science arose in response to some basic human drives. 1) a desire to improve one's environment, and 2) a curiosity to learn more of the nature of one's world. These same drives still lead to scientific research and investigation. The aim of science is to discuss the broad principles underlying the structure and behavior of nature in order to understand and predict natural events and happenings. The fundamental motivation for scientific endeavor, however, is deep curiosity about the nature of the world.

An abiding impulse in every human being is to seek order and harmony. Man's historic attempt to understand his environment has been based in large part upon his success in observing and in arranging his growing collection of facts in what seems to him an orderly and harmonious way. His search for order has been stimulated whenever lack of order has made him dissatisfied and disenchanted. This effort has increased tremendously over the years as a result of his ever-widening interest in careful observation and in purposeful and planned experiments.

Science is not only an organized body of knowledge but a way of doing things. It is an activity and not merely a body of facts. It is both a product and a process. Science can be fully understood only as a mode of action. The search for truth is the outstanding feature of the method of science and scientific research. Science never reaches "absolute truth" or "absolute reality" but only attempts to get nearer or closer to it.

Scientific research connotes systematic investigation toward increasing the

sum of knowledge in scientific fields with or without a specified aim in view. Scientific research is usually prompted by scientists getting new ideas or is undertaken under a planned program. The methods of research, however, do not follow a path leading infallibly from success to success. When an investigation of natural phenomenon is undertaken, it is certain that something will be found, but it is difficult to say in advance just what it will be. The unpredictable aspect of scientific activity complicates its organization, but time has shown that unexpected turns may often lead to more important developments than the main intent of the investigation.

IV. The Function of Knowledge

The basic function of knowledge is problem solving with a purpose. Any knowledge that cannot or does not solve mundane human problems or does not help the individual to know more about his Creator is in fact no knowledge. In true Islamic tradition, only knowledge that ennobles is worth pursuing; knowledge used for unworthy purposes is considered to be as poisonous as the bite of a serpent. Modern scientific knowledge brings comfort and happiness by improving one's life style and mode of living, but it has also created destructive weaponry for nuclear, biological, and chemical warfare. The value system given by Islam requires co-existence, and also active cooperation, on the basis of justice and equity, and unequivocally condemns the exploitation, aggression, and destruction that we see in the developing chaos brought about by the power of scientific knowledge harnessed to the secular goals of alienated man.

Modern knowledge is today divided into two important groups of disciplines: the social sciences and the natural sciences. These social sciences are basically man-made sciences and usually develop along with the development of society and the new culture that emerges as its consequence. The modern social sciences, namely economics, political science, sociology, psychology, etc., are the products of Western culture and society. They can thrive and perform a problem solving function effectively only in a Western environment and secular economic framework. They cannot be equally effective in an Islamic framework because the basic assumptions of the two systems are different. Unfortunately most of the modern Muslim scholars are trained in a Western system of education and have consequently developed expertise in that system. They are not equipped well enough to handle, much less to solve, problems rationally and satisfyingly in an Islamic framework. The traditional Islamic system had its own culture and mold of social sciences and it is the duty of the Muslim scholar of Islam to introduce, develop and disseminate the knowledge of Islamic social sciences to the Muslim *Ummah*. Unfortunately they have failed to do this sacred duty.

There are two types of Muslim scholars. The traditional orthodox '*ulemā*' are well versed in Islamic History, Islamic Law, and Islamic Jurisprudence (*fiqh*). They have mastered the Qur'ān and the *Sunnah* and they know their interpretation very well. They are indeed authorities in early Islamic scholarship. But they have very little knowledge of modern philosophy and science, which have transformed the world today. They look to the past with pride but have little to offer for the present or future. Another class of Muslim scholars has been educated in the Western system of education. Their knowledge is basically of the type that one finds in Western societies, namely, the modern social or natural sciences. Their knowledge of Islam is restricted to prayers, fasting, and various rituals for different occasions. There are very few Muslim scholars at home with the knowledge of Islam equally with the knowledge found in the modern social natural sciences.

The ignorant among the scholars try to find the details of scientific knowledge in the Holy Qur'ān, but the Qur'ān is not a text-book of science. It is a book giving light and guidance. It is code of ethics and morals. At many places no doubt, it indicates and sometimes explains the fundamental laws of nature and speaks of many scientific facts and sets directions for the believers. But it is neither a textbook of physics, chemistry, biology, or medicine, nor it is a manual of social sciences. Its greatness lies in its guidance and the framework it provides for an integrated and holistic approach to life and for acknowledging the power, greatness, and kindness of the Creator. One can draw inspiration from this reservoir for the study of all knowledge, that is, what is known today and what will be discovered in the future.

V. Islamization of Knowledge

This is not the first time that an attempt is being made toward the Islamization of knowledge. It has been done before. During the second and the third Islamic centuries a major exercise was conducted by Muslim scholars to translate most of the Hindu, Chinese, and Greek literature. They learned different languages, invited many non-Muslim scholars as teachers and researchers, built libraries, and did research. Part of this useful knowledge was rewritten and assimilated into the Islamic framework. What was unworthy was rejected. Today most of this literature and its improvement and further extension by Muslim scholars is associated with the Islamic heritage. Muslims have done this before and they can repeat it again. The task is no doubt stupendous but it can be done. Muslim scholars are quite capable of doing it only if they undertake it as a mission.

The starting point for Islamization of knowledge is indeed the reshaping and restructuring of education in the Islamic world. There is urgent need

seriously to rethink and reconsider the form and the content of science education in the Islamic countries. A fresh appraisal has to be taken of newly emerging problems and new programs designed in response to the requirements of each country. The new demands of agriculture, industry, trade, commerce, engineering and medicine must be seriously considered by the course designers. It is therefore absolutely essential that the system be reorganized and reshaped anew. And the reorganization and reshaping must be fully designed to meet societal needs in accordance with the objectives of all Islamic society for the future.

A nation's pre-eminence in the field of science and technology is determined by the excellence of its institutions of higher learning and research. An urgent need of all Muslim countries is to develop high level managerial expertise and high quality manpower in order to direct developmental efforts. Therefore it is vitally important for Muslim countries to develop a strong and productive system of higher education. Their higher education should be large enough to meet their future requirements and strong enough to give the Islamic world a feeling of self-respect and self-reliance.

The educational system currently prevalent in the Islamic world is a legacy from the colonial rulers. It is incapable of inspiring the Muslim youth or helping them to solve the problems of the Muslim *Ummah*. In fact, it has proved counter-productive. The system needs not only a drastic overhauling but, over time, a complete transformation. It needs a change of character and a transformation of the value system and ethical practice. Let our educational system be available to all, the rich and the poor, the privileged and the deprived, the talented and the average. Let our system encourage multiple entries, free access for everyone, different channels of studies, formal as well as non-formal, and recurrent programs, student-oriented curricula, and community participation. Let us shift emphasis from teaching to learning, from material gains to character formation, and from individual to social and national objectives. Let us give priority to adult education, universal elementary education, and sound scientific and technical education in our new plan of action.

VI. Strategy of Action

In order to prepare a blue print of action for the Islamization of knowledge it will be necessary to have some basic premises. We should recognize that:

- (i) To seek knowledge is an article of faith for every Muslim. One must continue to learn and seek knowledge from the cradle to the grave and follow it wherever one can acquire it.
- (ii) Muslims are enjoined to seek knowledge in submission to Allah (SWT), that is, to make manifest the Divine unity and to serve

humanity. Purposeless research and unworthy knowledge is forbidden in Islam.

- (iii) Islam believes in the integrated and holistic concept of knowledge. The epistemology of Islam recognizes that knowledge has a social function. In fact, in Islam there is a unity between man and his knowledge.
- (iv) The Western Capitalistic and Communistic philosophies and their operational forms are completely alien to Islam and cannot be assimilated and justified within the Islamic framework of knowledge and action.
- (v) For Islamization of knowledge, prior commitment to Islam as an epistemology is necessary. One has to be a believer before one can participate in this undertaking.
- (vi) Revealed knowledge is the highest form of truth and has a distinct place in Islamic society. All light and guidance has to come from this source.

The next step is communication among Muslim scholars and scientists. They must involve themselves in a thorough re-examination of science in terms of Muslim culture and conscience so that it can be fully absorbed and assimilated. It must however, that science is also a cultural force. It penetrates into society easily and effectively and therefore can bring a significant change in thinking, norms, and additional complexion. Science has to become indigenous to Muslim society before it can be used for the welfare and well being of Muslim society. It is not opposed to religion. On the contrary it strengthens the faith of the believer. Unfortunately, in Western society, science has been divorced from the moral value system of society and has become highly mechanistic and value free. The Islamic view point that it is value-full will have to be brought out clearly in teaching science to Muslim students and researchers.

The task may look difficult to begin with, but as we go along we will receive help and guidance from Allah, (SWT), to continue the good work of our mission. The following steps may be taken initially:

- (i) Muslim scientists from different countries should be asked to write textbooks on science for primary, secondary and tertiary stages of our educational system. These textbooks must reflect an Islamic world-view of science. Although scientific facts cannot be changed, their presentation and explanation can certainly be done in such a manner that they conform with our ideology and value system. In writing these textbooks, we must ensure that whenever we have to prove a scientific theory or principle on the basis of available information and arguments, we must provide an additional proof by quoting a relevant reference from the Qur'ān and the *Sunnah* if

available. This will not only impress the enquiring Muslim mind but strengthen its faith and belief.

- (ii) The Muslim scholar, must bring out clearly in these textbooks the unique contributions made by Muslim scientists. Unfortunately, there has been much dishonest reporting by modern writers on the contributions of Muslim scientists, although occasionally they do mention the Greek scientists. In fact, there exists incontestable historical evidence that many discoveries currently attributed to Western scientists were actually made by towering Muslim geniuses like Jabir, al Khawārizmī, al Rāzī, al Mas'ūdī, al Wafa, al Birūnī, Ibn Sīna, Ibn al Haytham, Umar al Khayyām, al Tūsī, Ibn-Rushd, and Ibn al Nafīs. Muslim historians of science must accept this challenge and break the myth of current claims by revising the original sources of Muslim scholarship.
- (iii) Simultaneously comprehensive programs of teacher training should be launched. The present cadre of science teachers in the Islamic world require a great deal of training in Islamic education and Islamic thought. In the Islamic system of education, the role of the teacher is central and pivotal. There is a kind of personal relationship between teacher and student. The teacher is also a mentor and spiritual guide and consequently should be fully equipped to discharge this function.
- (iv) Existing institutions in Muslim countries will have to be reorganized in order to overcome the present secular framework and character left behind as a legacy from the Western colonial powers. The older concept of *madrasah* with modern facilities will have to be revived and the artificial system of modern schools, colleges, and universities must be reorganized and reformed.

These reforms can convert the existing system of education into a new system designed to bring out the genius of the Muslim people and to meet their growing needs and aspirations. Complementary to educational reform however, is a social and economic transformation. Unless these are planned side by side the impact of educational changes will be minimal. A parallel program of social transformation must be launched with the spirit and fervor of a mass movement.

Much hard work must be done by Muslim scientists and scholars to Islamize scientific knowledge and philosophy. A note of caution, however, is necessary. In our enthusiasm let us not overplay our hand. We will have to be liberal and forward looking in the way we present science to Muslim students. It is the conceptual framework of science that needs to be recast from the Muslim point of view and emphasized. The details, methodology, and content can remain largely the same.