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ISLAM AND SCIENCE IN NORTHERN NIGERIA CASE OF DOGMATISM VERSUS OBJECTIVISM OR A NEW AGE SYNTHESIS

Age Synthesis?"

By

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I do not claim to provide a panacea to this rather thorny issue in this discussion. Instead, I hope to point out the expectations of science upon the learner, with the hopes that the reader may be able to discern for himself if these points of human existence are in conflict or harmony. In this regard, I move a single thesis: namely, that students in Northern Nigerian Islamic Culture may not fully commit themselves to science studies because of an assumed conflict between Islamic dictates and scientific endeavor; a thesis which will form the central backbone of this discussion.

One way of looking for possible conflict or harmony between Islam and science could be in the expectations each has of the individual. Islam, it is often said, is a complete world view of human existence and indicates the relationship of the individual to himself, his fellow humans, and most importantly, his creator. Science, on the other hand, is an *attempt* to explain the various interactions between the material forces of nature, with the fundamental assumption that every event has a natural cause, and that man is capable of understanding nature from his explanations of it.

Being concerned with the whole essences of man, Islam as reflected in its education, according to Al-Afendi (1980), has two basic dimensions: individual and social. Individual education aims at familiarizing the individual with his relation to other creatures, individual responsibilities in life, responsibilities towards the human community, social relationships, relationship to the universe and the universal phenomena and exploration of nature's laws in order to utilize and exploit them, and his Maker's creative wisdom apparent in His creation (Al-Afendi 1980 p.6).

The second facet, the social, sees Islamic education as having the objectives of building a society of good, pious, and God-fearing individuals where social justice prevails; where toleration, brotherhood, love, mercy, goodness and righteousness are predominant; a society based on mutual consultation and the maximum exploitation of the individual's intellectual capacities; where individuals enjoy freedom of thought and are competent to take responsibilities and where individuals can live an ideal, pure and happy life. (Al-Afendi 1980 p.17).

Just as these Islamic attitudes govern the existence of the individual as he relates to his spiritual essence, scientific attitudes also govern the intellectual behavior of scientists and science students. These attitudes, as discerned by Haney (1964) are: curiosity, rationality, suspended judgement, open-mindedness, critical-mindedness, objectivity, honesty and humility.

Haney's perception of curiosity is the desire for understanding on the part of the student when confronted with a novel situation which he cannot explain in terms of existing knowledge. A curious person asks questions, reads to find information, and readily initiates and carries out investigations. Curiosity is a stimulus to inquiry.

While curiosity stimulates inquiry, the attitude of rationality guides the scientist's behaviour throughout his investigation. This is the habit of looking for natural causes for natural events. The rational person is not superstitious. Willingness to suspend judgment is another attribute of personality fundamental to scientific behaviour. Persons with this attitude accumulate sufficient evidence before making judgments or drawing conclusions. They recognize the tentative nature of hypotheses and the revisionary character of our knowledge.

Open-mindedness is closely akin to suspended judgement. To comprehend science as a human activity, the learner must learn from experience that our ideas are tentative: i.e. susceptible to change at any time. The learner must be able to revise his opinions or conclusions in the light of new evidence. There is no dogmatism in science. But now ideas are not simply accepted in science because they are new or different from what obtained before. To be scientific also means to be critically minded. A person with this attitude looks for evidence and arguments that support other persons' assertions. He challenges authority with the questions "How do you know?" and "Why do we believe?" He is concerned with the sources of his knowledge.

The scientist must also be objective in gathering and interpreting his data and intellectually honest in communicating his findings. The attitude of objectivity reflects itself in the situation where an individual resists temptations to permit personal feelings to interfere with the recording of an observation or the interpretation of data, in order to achieve a correct or accurate solution to a problem. Complete objectivity, however, is difficult to achieve because an observer's perceptions are governed by his previous experiences and his expectations.

Intellectual honesty, on the other hand, is concerned with the conscious act of truthfully reporting observations. But this does not mean there are no frauds in science.

These attitudes, according to Haney, directly govern the intellectual behaviour of scientists. To be "scientific" means to have these personality traits, just as being a Muslim involves inculcating Al-Afendi's criteria. But the most significant point of Haney's classification of scientific attitudes is personality. It can be learned, at least in part, as a result of science instruction. Science can teach children to recognize their own limitations as well as the limitations of science itself. It is the humble person who uses natural resources wisely, for the common good, even though he might have to forego immediate gains that could accrue from their exploitation.

Haney's classification of scientific attitudes are somewhat similar to the *values* an individual acquires as a result of studying science according to the Educational Policies Commission (1966). These values are: longing to know and to understand; questioning of all things; search for data and their meaning; demand for verification; respect for logic; consideration of premises; and consideration of consequences.

According to the EPC, these values are not stated in the way more traditional (and in my interpretation, Islamic) values are stated. They do not contain some of the traditional value words, such as love, honesty, beauty, or patriotism (as used by Al-Afendi, for instance). But neither are they necessarily in conflict with traditional values. Like all values, they are guidelines for belief and hence, for action. Some of them merely define traditional values: for example, the demand for verification is nothing other than an approach to, and a profound respect for, honesty. And, further stated the EPC, like other set of values, these scientific values have the defect that neither individually not jointly do they provide a fully adequate guide for action; in many concrete human situations, various values–all cherished–are involved, and the choice of action involves an ethical compromise.

The values of the spirit of science express the belief that the compromise is likely to be better if based on thoughtful choice; in this respect, they differ from those value systems which hesitate to submit all problems to reason. Perhaps they differ from some other sets of values in the degree of reliance they place on the individual. Instead of insisting on his acceptance of certain values favored by men or groups allegedly wiser than he, the spirit of science insists that he makes up his own mind. In this, claims the EPC, the values of science are the most complete expressions of one of the deepest of human values - the belief in human dignity.

These are the characteristics of not only what is commonly called science, but more basically, of rational thought - and that applies not only in science but in every area of life. What is being advocated here is not the production of more physicists, chemists, or biologists, but rather the development of persons whose approach to life as a whole is that of a person who thinks - a rational person.

It is wrong, of course, to automatically assume that these attitudes and values of science as seen by Haney and the EPC can be inculcated in students by merely being added to the curriculum through science courses. Indeed, science can be so taught as to be irrelevant or even opposed to their achievement. Efforts to discourage challenges to traditional beliefs and attempts to indoctrinate are probably widespread in every school system, however advanced the content of science courses. What is needed is an education which turns the child's curiosity into a life long drive and which leads neophyte teachers to consider seriously the various possibilities of satisfying that curiosity and the many limitations on those possibilities.

If a single word summarizes the various characteristics of scientific spirit it is awareness - awareness of the uncertainty of man's knowledge, awareness of the extent to which the self influences one's perceptions, awareness of the consequences of one's values and actions, awareness of the painstaking modes of thought that have enabled man gradually to develop his knowledge of the world. This awareness is the fundamental character of freedom; only when a man is aware of problems and modes of knowing can he help himself and others to understand the world.

I do not perceive these attitudes and values as being a direct challenge to Islamic principles; just as being concerned with a sphere of human existence which has, in fact, been insisted upon by Islamic principles. Extensions of this argument may be seen in the basic metaphysical directions of scientific activity. Science, as argued before is basically concerned with attempts to explain the phenomena of the natural world. This statement, however, as pointed out by Hodson (1982) does not establish the status of scientific explanations and theory. It does not, he insists, tell us whether the "explanation" is a description of the actual state of affairs or merely a device to enable us to obtain more predictive understanding of events. A much more ordinary interpretation would assert that the aim of science is *truth*. The problem of such a view of science is that scientific theory is subject to modification and change (and even complete rejection), whilst the events of the real world described by theories are relatively unchanging. This means that scientific explanations are never declarations of absolute truth, since we have no way of knowing such absolutism.

The metaphysical concerns of science in search for the Truth moves basically into two directions: realism and instrumentalism. Realism is the doctrine which claims a direct relationship between the theoretical structures of science and the actual world. Successive theories are better descriptions of what the world is really like, so that science progresses towards the truth. A scientist aims at a true description of the world and a true explanation of observable facts, though he cannot know for certain that his findings are true, and may have to change his views in the light of new evidence or a new way of interpreting existing evidence. (Hodson 1982).

Instrumentalism draws a sharp distinction between concepts used in observation statements (about which we can obtain reliable knowledge) and concepts employed in theory-building (which are the products of imagination). The aim of science is to produce theories that are convenient devices for the description and prediction of phenomena. These two approaches are simply summarized in the statement that science and its theories are useful tools enabling us to explain what we do not really know. Whichever view an individaul adopts as being basic to scientific enterprise, one fact remains dominant: science relies on the bedrock of *uncertainty* about its directions as well as constructs. And while this element is not necessarily negative-diminishing science-it must be seen as a fundamental limitation of science. And, paradoxically, such limitation has proved a valuable asset to science in that it makes scientific study objective and non-dogmatic.

With this element of uncertainty hanging over the scientific process there is, therefore, "no quicker way for a scientist to brings discredit upon himself and on his profession than roundly declare - particularly when no declaration of any kind is called for - that science knows or soon will know the answers to all questions worth asking, and that the questions that do not admit scientific answer are in some way non-questions or "pseudoquestions" that only simpletons ask and only the gullible profess to be able to answer." (Medawar 1979 p. 31). This is not necessarily an open acceptance by the scientific community of the religious doctrine, but according to Medawar, very few scientists "nowadays are mugs enough or rude enough to say so in public. Philosophically sophisticated people know that a "scientific" attack upon religious belief is usually no less faulty than a defense of it. Scientists do not speak on religion from a privileged position except in so far as those with predilection for the Argument from Design have better opportunities than laymen to see the grandeur of the natural order of things, whatever they may make of it." (Medawar 1979 p. 31).

I do not feel that the case of Islam and Science is an issue of conflict in the strict sense. The basic tenet of science that could be argued to conflict with Islam involves scientific objectivism and the logical structure of the scientific process. Religion, it could be argued, is based upon absolute faith, with belief in God being its basic concern. But the logic of science does not necessarily invalidate Islam. In this regard, Nasr (1980) argues that "one must distinguish between the normal use of reason and logic, and rationalism, which makes for reason the sole instrument for gaining knowledge and the only criterion for judging the truth." (Nasr 1980 p.41). Nasr further continues by insisting that if Rationalism is considered an attempt to build, a closed system embracing the whole of reality and based upon human reason alone, then this begins with Descartes, since for him the ultimate criterion of reality itself is the

human ego and mot the Divine Intellect or Pure Being. The Cartesian conclusion *cogito ergo sum,* according to Nasr, places a limitation upon human knowledge by binding it to the level of individual reason and to the consciousness of the individual ego. In seeking to understand the role of reason in Islam, it is essential to distinguish between this form of rationalism and respect for logic, because on its own level logic is an aspect of truth.

This does not mean that the Islamic doctrine is devoid of its form of rationalism - rationalism that predated Cartesian rationalism by centuries. Ibn Rushd, (in Hourani 1976), for instance, identifies four modes of rational expression in Islam: the first occurs where the method is common yet specialized in two respects i.e. where it is certain in its concepts and judgements, in spite of being rhetorical or dialectical. These syllogisms are those whose premises inspite of being based on accepted ideas or opinions are accidentally certain, and whose conclusions are accidentally to be taken in their direct meaning without symbolization. Islamic texts (that reflect) of this kind have no allegorical interpretations and anyone who denies them or interprets them allegorically is an unbeliever. This means direct premises lead to direct conclusions. The second class occurs where the premises inspite of being based on accepted ideas or opinions, are certain, and where the conclusions are symbols for the things which it was intended to conclude. Texts of this sort can be allegorically interpreted. The third is the reverse of this: it occurs where the conclusions are the very things which it was intended to conclude, while the premises are based on accepted ideas or on opinions without being accidentally certain. Although these texts do not admit to allegorical interpretation, their premises may do so. The last occurs where the premises are based on accepted ideas or opinions, without accidentally being certain, and where the conclusions are symbols for what it was intended to conclude. Interpretation in this case can only be done allegorically by elites, while the duty of the masses is to take them in their apparent meaning. (Ibn Rush in Hourani 1976 p. 64-65).

Hourani adds that where symbols are used, each class of men, demonstrative, dialectical and rhetorical, must try to understand the inner meaning symbolized or rest content with the apparent meaning, according to their capacities. (Hourani 1976 p. 65). Thus, according to Ibn Rushd, people in relation to Islam, in his perception, fall into three classess: one class is those who are not people of interpretation at all; these are the rhetorical class. They are the overwhelming mass, for no man of sound intellect is exempted from this kind of assent. Another class is the people of dialectical interpretation; these are the dialecticians, either by nature alone or by nature and habit. The final class is the people of certain interpretation; these are the demonstrative class, by nature and training i.e. in the art of philosophy (as Ibn Rush sees it) (Ibn Rush 1976 p. 65).

Thus, Islam, through the likes of Ibn Rushd, has its own way of defending itself against charges of dogmatism and irrationalism. Even if elements of dogmatism are traced, for instance in Ibn Rushd's first class of modes of Islamic expression, I would argue that this is a reflecting of human reason as indicated by the Cartesian arguments in the latter centuries. Science, therefore, would seem to have no basis for making the smug assertion that it is more rational than Islam as a religion in its basic conception, particularly as the scientific enterprise is suffused with uncertainty about the nature of absolute knowledge as defined and perceived by science itself.

As mentioned earlier, there are two dimensions of reason is science: one expressed in the form of rationalism, and the other, respect for logic. It is the latter aspect that features prominently in discussions about the logic of science, as expressed by the Educational Policies Commission (EPC 1967). The EPC, in relation to this aspect of the logic of science, identified two traits: demand for verification and respect for logic.

According to the EPC, implicit in the concept of the tentativeness of knowledge and of conceptual schemes is the concept of test. Knowledge, is at best, hypothetical, and the statement of a hypothesis suggests that it is subject to test. A thinker, therefore, consciously seeks to find ways to expose the results of his thinking to test or experiment and to the play of as many other minds as possible. This is the case for demand for verification. Respect for logic in science is seen in the statement by the EPC that logic is the science of valid inference. Logical systems constitute *agreed* bases by which the validity of inferences may be judged. Logic is used in connecting a thinker's concepts in a manner open to evaluation by other persons. A thinker judges the validity of inferences and deductions in terms of logic.

Since science is basically concerned with what can be perceived, and if logical structure and testifiability can be considered its main instruments, then I do not feel there is much case to be made of possible conflict between Islam and science on this score. These facts of science are concerned with the accumulation and validation of knowledge (for a certain period) about the natural world, and Islam certainly encourages this sort of contemplation. Evidences of this Islamic urging to empirical studies of the natural world are many in the Quran (the Islamic text). An example is found in Surat Baqrat 164 which says: "Behold! In the creation of the heaven and the earth; in the alternation of the Night and Day; in the sailing of ships through the ocean for the benefit of mankind; in the rain which God sends down from the skies, and the life which He gives therewith; to an earth that is dead; in the beasts of all kinds and He scatters through the earth; in the change of the winds, and the clouds which they trail like their slaves between sky and the earth; (here) indeed are Signs for a people that are wise". (The Holy Quran, translated by Ali 1938 p. 64).

This, it could be stated, supports the scientific fundamental assumption that there is a law in Nature, and that man is capable of understanding such interconnections. The Islamic text, however, is not a book of Chemistry, Biology of Physics. It is Book of guidance. "Therefore", argues El-Shahat (1980), "it is vain to look for predictions in it about different inventions and discoveries. This Book is for guidance of man till the end of time, embodying the ultimate truth and reality, and it is its miracle that *it has never been contradicted* by the findings of science. It is not an impediment to human progress. The Glorious Quran, surely, encourages man to make progress and it contains indications covering all matters which will arise in future till the end of time." (El-Shahat 1980 p. 57: my emphasis).

So if science can be considered the search for truth, the search for unifying elements in the material forces of Nature, then by itself it does not contradict Islam; for Islam insists that the believer carries out such inquiry. This is seen in the statement by El-Ṡhahat that "the Glorious Quran produced a longing for scientific inquiry by encouraging "takkafur' (thinking), "taqquel" (intellectual work), "tadabur" (contemplation) and thus paved way to the true understanding of nature and natural phenomena." (El-Shahat 1980 p. 57). Science assumes that there is a natural order. This is an Islamic truism, as reflected in Surat Yasin 38-40 which says "And the sun runs his course for a period determined for him; that is the decree of (Him), The Exalted in Might. The All-Knowing. And the Moon, - We have measured for her Mansions (to traverse till she returns like the old (and withered) lower part of a date-stalk. It is not permitted to the Sun to catch up the Moon, nor can the Night outstrip the Day. Each (just) swims along in (its own) orbit (According to the Law)" (The Holy Quran, translated by Ali 1938 p. 1178).

Nature, therefore, is the concern of the scientific process. Science is a problem-solving activity. Problems exist because scientific knowledge has an autonomous existence outside the minds of individuals or groups of scientists. According to Hodson (1981). "science has achieved its remarkable success not because the problems it tackles are simple, or because nature is particularly easy to study, but because scientists have refined and regulated their activities into a particularly effective scientific practice". (Hodson 1981 p. 365).

So where do all these arguments and counterarguments lead us? Popper (1963) puts its simply: science is valued for its liberating influence - as one of the greatest forces that makes for human freedom. Science liberates because scientists dare to go beyond the world of the senses. "Then", says Hodson (1982), "by trying to explain the regularities which are deduced from theories they explain the known by the unknown. A scientist aims at a true description of the world and a true explanation of observable facts (a description of these facts must be deducible from

the theory). But he cannot know for certain that his findings are true. Theories are conjectures which are subjected to tests, they are guesses about reality and may be wrong. Although we have no access to reality, *it would be absurd to think that nothing was real except that which we can be certain of* Consequently, we assume that we have described reality until we learn otherwise. Certainly, theories are our inventions; they are the product of human consciousness. When they clash with the facts we know there must be some reality - the reality which produces effects different from those predicted by our theory". (Hodson 1982 p. 25: emphasis mine). Science, then, no matter how logical its structures are, has a limitation: that of uncertainty. It would be irrational - and against the grain of the ethos of science itself - for science to waive Islam away on charges of dogmatism: a point similarly made by Hodson above, and Medawar (1979).

There *is* a quest for an Islamic Science in the Muslim world that can be taught to students: a way of making science acceptable to Islam. But I prefer to consider an Islamic Science debate as the New Age Synthesis. This is because the term "Islamic Science" may have, according to some Muslim thinkers, some derogatary implications. Nasr (1980), for instance, believes that adopting an ideology from the West and attaching adjective "Islamic" to it "betrays Islam by reducing it from a total body of principles and from a complete world view to an adjective modifying a noun, which has a completely different cannotation in the matrix of Western civilization that has given birth to (such ideology)" (Nasr 1980 p. 40).

And yet the science that is commonly accepted in the Northern Nigerian Islamic Culture *is* a product of such civiliization. And I will certainly not be naive enough to believe that we can come up with an accepted science program or conception which does not take into consideration such ideologies. My view - as seen in what I term New Age Synthesis - is that science, as presently accepted, can be fitted into the Islamic ideology. This is because when we contemplate science, we should in essence, restrict ourselves to a *method*, and substitute any underlying Western sociological principle embedded in it with our own Islamic principles. This is the New Age Synthesis: science, pure and unadulterated with any suspicious moral values, brought in perfect harmony with Islam, pure and unadulterated. Not only may such Synthesis enable the Northern Nigerian Muslim learner to retain his Islamic Identity, but it may also keep him riding high on the tides of the Machine Era we are moving into to.

But is such Synthesis possible? In attempts to answer this question, Sardar (1979) came up with four possible views on what he calls "Islamic Science." These views reflect the opinions of selected Muslim scientists about the possibility of an Islamic Science. (All quotes henceforth are from Sardar 1979 pp. 355-357 unless otherwise stated).

The first view is Traditional, and according to Sardar was "simply and forcefully" presented by Ali El Hili, Dean of the Faculty of Mathematics Physics and Natural Sciences, University of Tunis. And it is this: "there is only one science: it is universal, neutral and value-free. The study of nature is impersonal and free from human values. It has to be that way. . . We cannot compromise the basic rationality of science with our religious concerns. if we compromise the basic objectivity and neutrality of science with Islamic values and ethics, we will destroy the very foundations of science.

The second view is presented by Affin Suhaimi, Dean of the Faculty of Science and Environmental Studies, University of Agriculture, Selangor, Malaysia, who believes that "science is neutral, but the attitude by which we approach science can be secular or Islamic." By this is meant that "we recognize the limitation of human reason and human mind; and we acknowledge that knowledge is the property of God." According to Sardar, Suhaimi is concerned about the discussions on Islamic Science. The argument that Islamic science is something different from western science is sometimes used to block the transfer of scientific knowledge from the West to Muslim countries. In this regard, Suhaimi believes that "science, in its pure value-free form, we can take from all sources. . . We should take from the West as much as we can". To support his argument, he quotes a tradition of the Prophet Muhammad who is reported to have said that 'knowledge is like the lost camel of a Muslim. Take hold of it whenever you come accross it'. "Our people forget", says Suhaimi, "that Islam is within us: we put the science to Islamic or un-Islamic use. Science is Islamized in the way we practise it and utilize it".

The third view suggests that Islamic science is more a matter of philosophy than science but at the same time, it argues that both modern science and technology are distinctively occidental. Today, says Sardar, throughout the world all significant science is western both in style and method, whatever the pigmentation or creed of the scientist. Ali Kattani, Professor of Electrical Engineering at the University of Petroleum and Minerals in Dahran, Saudi Arabia, makes the point: "science is intricately linked with ideology in its emphasis, scale of priorities, control and the direction of research to such an extent that scientists have become ideologues. Their craft is not neutral, but promotes a certain pattern of growth and development and a certain ideology". Islamic Science, according to Kattani, is that science which reflects the needs and aspirations of Muslim people.

The fourth and final stand on Islamic science also emphasizes the social function of science, but argues that Islamic science has its own, unique entity that differs considerably from science as it is practised and nourished today. Western science, it is argued, draws its inspiration from the Enlightenment and its assumptions are those of the philosophics and the rationalist world-view. Some of its underlying assumptions are those of medieval

Christianity. As such, science, as we know it today, is a product of western civilization and an embodiment of its culture, ethos, and values, says Sardar. The proponents of this final view argue that Islamic science is based entirely on different assumptions about the relationship between man and man, man and nature, universe time and space. Because the basic axioms of Islamic science are also different, it is a science with its own identity and character. Said Abdullahi Naseef, the then Vice Rector of King Abdul Aziz University, Jeddah, "under Islam, science is subservient to the goals of society. The goals of Islamic society are to increase brotherhood, reduce consumption and increase spiritual awareness. A science with these goals has to be different in nature and style from science as it is practised today. Furthermore, these goals cannot be pursued by any means. They can only be pursued by means permitted by Islam. Aggressive rationalism, to give an example, is considered by Islam to be anti-human. So Islamic Science does not accept the tyranny of one supreme method" (and here I think I detect a light stab at Kuhu, and silent pat on the back for Feyerabend). " . . . We emphasize methods in conformity with the nature of inquiry. Within these parameters, Islamic Science has access to reason and experience, observation and experimentation, deduction and induction, but always we turn to revelation as the Supreme authority. Islamic science is the most exact of sciences without being fooled into believing that the method of experimental and theoretical sciences can lead to eternal truths."

Naseef's final point is echoed by Feyerabend (1975) who claims that his criticism of modern science is that it inhibits freedom of thought. If the reason is that it has found the truth and now follows it then I would say that "there are better things than first finding and then following such monster." (Feyerabend 1975 p. 158). Such reflections from the dark corridors of an "anarchist epistemologist" in my opinion simply reflect the limitations of science as we know it: there is no absolute truth in science. Whether one accepts it or not, Islam claims to provide certainty in human existence. And certainly, science is not concerned with metaphysical aspects of human existence: the *way* and *how* of reality, in some cases. Science concerns itself with the what of existence. Within these limitations, I do not feel there is a case for conflict between science and Islam and this point should be made clear to our science teachers.

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