SCIENCE: A BELIEF IN METHODOLOGY

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Abstract
Scientific discoveries, laws and principles have imparted on the world positively and negatively, especially in the ideas and ways of life of humans. The established laws and principles of science applicable in human activities, present the activities of science as a belief system; a belief in its methodology. In fact, in carrying out scientific investigations, the scientific method is the factor that infers its universality, objectivity and acceptance. As a result, this paper is poised to interrogate the features that make science a belief in methodology, and which invariably make science a religion of the intellectuals.

Key Words: Belief, Methodology, Religion, Science.

Introduction
The question of science as a belief system or religion which is based on methodology has been a controversial issue among philosophers, scientists and others. There are diverse views from different geographical locations, cultures and historical periods on this issue, with some construing the relationship between science and belief system as one of conflicts, others describing it as one of harmony, and some others proffering little interaction. Science appreciates reason, empiricism, and evidence whereas belief systems are based on faith, religion, revelation and sacredness. However, science and religion (or belief system) are complicated social and cultural activities (Alston) that vary across cultures and change over time. A religious tradition is not just a set of intellectual beliefs or abstract ideas. It is a way of life for its members. Every religious community has its distinctive forms of individual experience, communal rituals, and ethical concerns. Above all, religion aims at the transformation of personal life, particularly by liberation from self-centredness through commitment to a more inclusive centre of devotion. Yet, each of these patterns of life and practices presupposes a structure of shared beliefs. When the credibility of central religious beliefs is questioned, other aspects of religion are also challenged (Alston). In the same vein, once the methodology of science is questioned and construed as a belief system, the entire gamut of science will be challenged.

Religious Orientations of the Scientific Method
Generally, methods are sequential steps or incremental principles and procedures used to perform a particular activity. Accordingly, Ukpokolo (208) avers that the scientific method refers to the procedures used by scientists in their investigations. Thus, the goal of science which is the discovery of the truth about reality can be realised if science follows a definite method or set of methods. With this, science claims to be in possession of a method which can reveal the truth about reality and this implies that science provides the most impressive result of human rationality, thus ascribing to science the status of the paradigm of rationality (Newton-Smith, 1). Following Goldhaber and Nieto, the scientific method can be described as “a body of techniques for investigating phenomena, acquiring new knowledge, or correcting and integrating previous knowledge.” Thus, for a method to be scientific, it must be based on empirical and measurable evidence subject to specific principles of reasoning. In other words, the scientific method refers to “the systematic pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment and the formulation and testing of hypothesis” (Lampe, 12). From all indications, observation and experimentation are central to the scientific method, and for the purpose of
clarity, observation consists of a careful and critical examination of a phenomenon by noting and analysing the factors and circumstances that appear to influence it, whereas experimentation consists of observation of phenomenon under pre-arranged and carefully controlled conditions (Alonso and Finn). The scientific method is therefore generated as rules and procedures to guide scientific observations and experimentation.

Nevertheless, some religious orientations seem to dominate the scientific method. Such orientations have imposed several beliefs on the scientific enterprise. First among such beliefs is the belief in models. Since science cannot provide a complete objective description of the system which it investigates, it takes recourse to presentations in models. As a result, one of the greatest attentions of the scientific method is given to the speculative model of hypothesis, theory, and paradigm (Compton, 41). This model determines further direction both for other forms of scientific modelling such as nature, laboratory or mathematical, and the research process itself. Note that any such model is based on a system of initial presuppositions, assumptions, and axioms taken on trust. For instance, the Darwinian model of formation of species rests on the speculative principles of gradualism and progress while Lobatchevsky's geometrical model rests on the axiom that two lines parallel to a given one can be drawn through a point. Likewise, Hegel's dialectical model rests on accepting the primacy of the ideal (Compton, 41). Similarly, as a rule, the scientific model which satisfactorily describes the data which is gathered up to the time of the model's formation (including data incorrectly interpreted), becomes a widely accepted working model. The primordial presuppositions of the model, conditional in form and religious in essence, go gradually beyond the system of the issues under consideration, or they turn out to be equivalent to the objective facts observed and described by this model, and result in a phenomenon of circular reasoning (Compton, 41-42). In short, faith in the correctness of the speculative presuppositions gives place to faith in the correctness of the model itself. In this, what happens is that the collective mentality identifies the model as the reality described by it. The original understanding of the boundaries for the usage of the model is lost. As a result, inadequate syncretic conceptions arise (Wilson, 90). Moreover, the important qualities of the scientific method are its creative potentials. Having identified a model with reality, the researcher becomes a creator of the reality, building it in accordance with the model which he has accepted. This is the ontology of scientific pronouncements. This means the incarnation of originally speculative conceptions – the realization of things expected. This has results which are conditioned by the model itself, but their conformity to the model is taken for corroboration of faith in its correctness; this develops the second level of circular reasoning (Armstogy, 104).

Of no small importance is the semantic pre-determining of the interpretation of newly discovered facts within the bounds of the model. For example, should an experiment on the laboratory synthesis of the origin of live matter out of inorganic matter have a positive outcome, most contemporaries would certainly accept it as evidence that there is no need for an intelligent Creator (Armstoy, 97). In fact, it would prove the contrary, namely, that live matter could be produced out of inorganic matter only by an intelligent being with sufficient knowledge and practical skills, provided there is a proper selection of equipment and use of appropriate experimental methodology. Werner Heisenberg (quoted in Armstoy, 101) made the valid remark: “What we observe is not nature as it is but nature in the form it reveals to us due to our way of formulating questions”. This is the stage when the scientific method departs from its religious and moral roots that are the most dangerous. If any model, always conditional and limited, is widely adopted and also exceeds the bounds of the sphere of its application, it inevitably results in the formation of conditional and limited reality. Accordingly, Golovin asserts that social revolutions of the twentieth century offer an excellent illustration of the fact that no consequent sacrifice, human, financial and cultural is taken into consideration
when the masses are possessed with a speculative conception and attempt to carve reality according to it.

**Understanding Science as a Belief in Methodology**

Many scientists and philosophers of science have argued for the disparity and difference between science and belief, and also, science and religion. Historically, science and religion have been conceived as irreconcilable antagonists. One obvious reason is because one who is thoroughly convinced of the universal operation of the law of causation cannot, for a moment, entertain the idea of a being that interferes in the course of events. Another reason is that science requires evidence whereas, belief does not. Belief, rather, is based on assumptions or things which were reportedly observed indirectly and subjectively, but only by a selected few people. Thus, it requires faith for a belief to gain grounds. Alston posits that religion is a system of fundamental principles and views held with no evidence but by faith in God, whereas, science is the development that covers the establishment of a theoretical systematization of objective knowledge pertaining reality so as to describe, explain, and predict processes and phenomena of reality, based on that which is discovered by means of its laws.

Furthermore, science is a century-old endeavour to bring together, by means of systematic thought, the perceptible phenomena of this world into as thoroughgoing an association as possible. Put succinctly, it is the attempt at the posterior reconstruction of existence by the process of conceptualization. Thus, science is methodical thinking directed toward finding regulative connections between our sensual experiences. Religion, on the other hand, deals with goals and evaluations, and, in general, with the emotional foundation of human thinking and acting. It is concerned with man's attitude toward nature at large, with the establishment of ideals for the individual and communal life, and with mutual human relationship. Also, religion has mythical or symbolic content which is likely to come in conflict with science whenever this religious stock of ideas contains dogmatically fixed statements on subjects which belong in the domain of science. However, from the foregoing description of science, there are indications of its religious aspects which include the following:

i. A belief in the objective existence of natural laws. ii. A belief in the union of these laws in spatial-temporal continuum; this belief is seen through immediate observation and laboratory experiments.

ii. A belief in the rational qualities of these laws that permits one to understand and know them by similar rational means (Alston).

However, formulating of belief system is essential to human survival, and perhaps even to human consciousness. As human beings, with no pre-existing knowledge of the universe, it is necessary that we make observations and draw conclusions from them in order to cope and survive. Thus, from the individual's "...subjective experiences, an external objective reality must be assumed in order to function on a level beyond your average garden vegetable" (Davidson). So, belief systems grow into complexity, beyond the initial simple common sense generalizations, and also, to attempt to explain and understand reality. Most scholars, scientists in particular, have problem with the claim that science is based on faith just as much as religion is. There is a common understanding that everyone, including scientists, must start their quest for knowledge with some improbable axiom – some *a priori* belief from which they deduce other truths. This starting point is a 'given' accepted without questioning. Eventually, in each belief system, there must be some improvable, presupposed foundation for reasoning since an infinite regression is impossible. Basically, therefore, there are two broad categories of belief systems – scientific and religious. While religion as a belief system is based on faith, science as a belief system is based on methodology. The scientific method makes the assumption that the universe obeys a set of rules (Davidson). This assumption is
broken into two articles which must be taken entirely by faith: (1) There exists an external objective reality; (2) There exists some sort of uniformity through time, given that the universe has structure, and that predictions and generalizations are possible.

**Evaluation and Implications**

However logical and persuasive a paradigm which we acknowledge might seem to us, it is always based on unverifiable grounds of belief and trust. That is why no matter how famous a scientific theory is, the appearance of even minute additional data can completely destroy a previous model at any moment (Wilson, 98). Consider the example of the origin of living matter from inorganic matter. Two centuries ago, you would have been shown an experiment that frogs are generated out of silt, and maggots come from rotten meat. The theory of spontaneous generation was the leading generally accepted scientific theory of origins.

Nevertheless, since Pasteur’s experiments proved the fallacy of the theory of spontaneous generation of life, the impossibility of the theory became the leading generally accepted theory (Wilson, 86). Very soon after that, the place of the leading generally accepted theory was given to Oparin’s idea of the generation of elementary forms of life in the primordial soup. But after thorough analysis of the results of Mueller and Fox’s laboratory experiment along with the recent discoveries in informatics, genetics and molecular biology, the enthusiasm of the scientific world has noticeably being growing cold towards the ideas of Oparin (Golovin). So, which one of these leading generally accepted scientific theories is correct? What do we know for certain about this issue? Can we actually be certain of what we know and what we do not know? Unfortunately, there are no answers to these questions within the limits of the scientific method itself. Now, there is the need to exceed the bounds of the sphere wherever the method is adopted and approach the foundation on which the method is based. But this foundation belongs to another sphere namely belief system or call it religion.

**Conclusion**

Above all, science, in practice, requires some amount of faith. It only differs from religion in the sense that while religion is a system of beliefs primarily based on faith, science is a system where beliefs are derived from objective methodologies. In other words, whereas, science rejects assumptions based on faith, it makes assumptions based on objective methodologies. As a result, science cannot be done without some significant measure of faith. In short, science is a belief in methodology.

**Works Cited**


