
A Discourse On Modern Natural Science As Philosophy Of Nature

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ABSTRACT

Modern natural science is an upshot of philosophy of nature. This paper hopes to discuss and show that modern natural or empirical science is the handmaid of philosophy of nature. There has been popular notion that these disciplines are distinct and differentiated based on their distinct methodology. To fully establish the notion that natural science is natural philosophy more securely, arguments will be presented from the standpoint of the needs and conditions of both modern science and philosophy of nature. The arguments shall proceed from four standpoints that will establish the unity of all knowledge or sciences, procedures of the scientific method, an exposition that science is simply philosophy and science as the upshot of metaphysics.

Introduction

It is a reality that before the popularity of modern natural science, science was subordinate either to the tradition of philosophy or the art of craft. There were really two sources of science namely the technical tradition as practiced by the artisans and the spiritual tradition by the Priest (especially in Egypt) and the scribes. These traditions continued until the philosophers broke away from the priests, scribes and craftsmen. No matter how far back in history that we go, there were always some techniques, facts and conceptions which were scientific in character (Stephen 1979)

In determining the division between the sciences, one may discover that it will be very difficult to appraise a particular science as the best. The reason is that there are always an overlap on the subject matter between one scientific enterprise and the other. It has been discovered that some are little more than an expanded expression of the general sciences. All the natural sciences are actually identified with natural philosophy. So, we may say that there is really no difficulty in correlating them as one.

Interpreting The Universe

The interest of man into the nature of the universe has been with man's philosophical search into issues that are both corporeal and incorporeal. Man has used various theories to explain the emergence of man and the cosmos. Various evolutionary theories and the Eden theory moved our earliest ancestors to record for us the earliest written record in the books of the Bible. The Inspired authors informed us of the origin of the earth and its creation from the spoken word of God. Here, he named some aspects of nature "In beginning God created the heavens and the earth, the earth was without form and void, darkness was upon the face of the deep, and the spirit of God moved upon the face of the water" If we read further from Genesis 1:1-5, we shall see the very basic elements of nature, which is the Earth, Sky, Water, Light and Darkness. If we observe the Empedocles' (Samuel 1989) conception of nature, we shall notice a similarity to the author of the Bible. He saw the universe expressed in Earth, Air, Water and Fire. Any man who has looked out over the earth, the powerful waves of the oceans and heights of the stars up in the sky would realize an awe-inspiring wonder in nature. The ancients philosophized on the natural things the saw and perceived. It should be known that right from the ancient Aristotelian philosophy to the 19th century, the term "Natural philosophy was the common term used to describe the practice of studying nature and the universe. (Nwanegbo-Ben and Ozoigbo 2017) The first philosophers were the first scientists. Man's special interest in nature became more popular generally with western thinkers. They questioned what natural things were made of and the underlining motion in the universe. We called these thinkers philosophers, but today we refer to the more serious students of nature as scientists. Today we no longer think of one science of nature that embraces all things but rather we list many natural sciences. These listing were due to departmentalization and specialization due to the tremendous amount of knowledge man has amassed about natural phenomena.

The Scientific Procedure

Natural Science is a branch of philosophy concerned with understanding the nature of reality and possible ways we can comprehend it. We may be aware that when science is mentioned, the first thought that comes to the mind of an ordinary thinker will be Physics, Chemistry, Biology or Mathematics (Nwanegbo-Ben, 2008) The word science is taken etymologically

from the Latin word “*scientia*” which literally means “knowledge”. Thus, Physics, Chemistry, Economics, Psychology, Logic, History etc are all sciences because they are specialized knowledge.

It is commonly understood that the method of philosophy is the deductive method, and that of modern sciences seen as inductive. The 16th century witnessed an increase in the use of the inductive method. There was emphasis on observation and experimentation. We have the theoretical sciences and practical sciences. Theoretical or Speculative sciences seeks knowledge only or to know its object. A practical science is one which has for its purpose to modify. Thus, the difference has to do with the purpose for which it is acquired. If it is for knowledge alone, then it is theoretical or speculative, if it is acquired for some kind of operation other than mere knowledge, or for the making of something, then it is practical. (Nwanegbo-Ben. 2008)

Science is generally regarded in three main ways. (a) Science is perceived as a body of knowledge that can be identified in each of these: They could be Physics, Dentistry, Petroleum, Economics etc. (b) Science can be seen as a method of acquiring special knowledge in order to understand the world and phenomena around it. The well known procedure for obtaining knowledge in these areas of study is the scientific method of instigation. The procedures include generally, the identification of problem, development or formulation of hypothesis, data collection for experimentation, analysis and theory formulation which emanates from inferences drawn from the process of investigation. (c) It is an institution comprising of thousands or millions of professionals in various research institutions and universities. All these approach and ways of understanding science allows natural scientists to be able to access information of the natural world and develop theories and models for the explanation of natural phenomena.

The major principle of the modern natural sciences that has been departmentalized into various research disciplines is that its goal is to understand and explain the underlying laws and principles that govern the natural world. This includes comprehending the matrix and fundamental properties of matter, the forces that act upon it and the ways in which energy interact. It goes further to help us understand the evolution and behavioral patterns of living

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organism and the universe, both in their Chemical and Physical processes. We may all know that the broader study of biology led to the development of medicine and the treatment of diseases. Our study of physics has metamorphosed to the development of electronics, computer and the development of various energy sources.

Despite the general conception that natural science emphasize induction and we have identified some generally accepted disciplines within the confines of Natural science, we should remember that the idea of the scientific method are also applied in the study of both the cultural sciences like History languages and the social sciences like Sociology, Political Science, Psychology etc. They are all systematic and organized in their interpretation of the phenomenal world or issues bordering on the phenomenal world. Though experiment is the key in defining scientific enterprise, it is not definitive of science. There are real sciences like Mathematics, Astronomy, Theoretical Physics which are not experimental. Some sciences are more descriptive and theoretical than experimental (Herrick, 2006.)

The historians in their research, document through information gotten from oral tradition through the custodians of history and tradition of a given people. This is done by consulting elders for information. They also use dating methods such as carbon 14 dating to buttress what they wish to establish. Dating materials drawn from the archeological records made by direct study of an artifact. With the assistance of archeologists, radiocarbon dating for organic materials can be instituted. These and more methods of historians is why History and Archeology go hand in hand. Thus, investigation of issues of nature are multifarious (Nwanegbo-Ben, 2016.)

The religious individual has relatively subjective experience which he uses to interpret reality. All religious individuals have their research methods unknown to neophytes of that particular religion. Within religion, symbolism plays a role. Symbolism as theoretical entity has its major expression within the confines of supernaturalism exemplified in various religions. Each has a procedure that is systematic in character. By implication, the major distinction between the procedure of scientific investigation within the natural sciences and other sciences like the cultural and social sciences are minor procedural differences. They are all organized and systematic in their approach.

Interconnection Between Modern Natural Sciences and Philosophy Of Nature

The Natural Science and Natural Philosophy are closely interconnected. While natural science provides us with the means of comprehending and explicating the content of the natural world through observational and experimental procedures, Natural philosophy on the other hand examines the methods and assumptions of the natural sciences to gain explicit comprehension of reality. Thus, both disciplines play crucial roles in our understanding of the natural world. It may be said that Natural Science has long ago taken over from the Philosophy of Nature or Natural philosophy. Why then do we border to continue the discussion? The reason is that we have observed that though science seems to be able to interpret everything about nature, but the best scientist have entered into the domain of Philosophy, either consciously or drawn to it unconsciously (Weisz, 1959) In reality, it appears more accurate to say that all scientist whether they observe it consciously or unconsciously are philosophers of nature. According to Nwanegbo-Ben (2020) the uncertainty principle is a major principle in the Physical Science of quantum mechanics that explains the universe at the subatomic level. Werner (1958) showed that uncertainties or imprecision's always turned up if one tries to do measurement. He posits that these uncertainties are fundamental in nature inherent in quantum physics. By this, Physics is not independent of philosophy.

The works of Albert Einstein, especially on The Evolution of Physics began the discussion of motion with concept that is similar to the Aristotelian motion. Thus, modern physics and classical or Aristotelian physics are related.

Those who had degrees in philosophy in the present or recent past have come across names of great scientists such as Albert Einstein, Isaac Newton, Max Plank etc in their studies in History and Philosophy of Science. However, they did not delve into their indebt mathematical calculations and the theories they postulated to arrive at their claims. On the other hand, the students of Modern Natural Science will have only minimal background of great philosophers like Socrates, Democritus, Aristotle, Plato, Kant, Hegel, Descartes etc. These, they may come across in their general studies of Philosophy and Logic. These fields seem quite distinct in subject matter and methodology.

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The first thinkers among the Greeks that we considered as Philosophers were actually the scientists of their days. Not actually all Greek thinkers were natural philosophers, some tried to explain everything in a metaphysical dimension. Aristotle philosophy of nature is considered to be identical with today's physical sciences. This idea was indicated for us by St. Thomas Aquinas in his introduction to the first book of Aristotle's physics where he gives a brief listing of Aristotle's work on physics (Nature) (Aquinas, 1999) goes on to list other books of Natural Science written by Aristotle. He listed among these the *De caelo*, On the heavens, here Aquinas tells us that it has to do with things which move by local motion.

Another very important aspect of Philosophy of Nature is the concept of determinism, which postulates that all events within the natural world are determined by prior causes, hence predictable. This claim has been the major proponent in the development of most scientific theories and in Physics and Astronomy. The emergence of the new science in the 16th century increased the application of the inductive method. Prior to this time induction was not stressed. The philosophy of Aristotle and St. Thomas Aquinas was not entirely deductive because Aristotle wrote a chapter on Induction in one of his works on logic; The Prior Analytic and he applied it in his physics. For example, his argumentation for the matter-form doctrine as to the constitution of natural bodies is inductive (Hollencamp, 1973)

The Relationship Of Natural Science To Metaphysics

The Natural Science and Metaphysics are two distinct ways of understanding the world. While the Natural Science focuses its attention on comprehending and explicating the content of the physical world, Metaphysics on the other hand stressed on understanding and explaining the nature and underlying structure and dimension of reality as a whole.

In his prolegomena to any future Metaphysics Kant asked whether or not metaphysics is possible (Kant, 1772). According to him, metaphysics is incomprehensible to man because our minds are constrained to empirical realm of space and time. In his thought, he stressed that speculative philosophy consist in logic and metaphysics, which means that human knowledge can only grasp mathematics and the study of the natural and empirical realities.

However, metaphysics presupposes a valid natural philosophy as evident in Aristotle-Thomistic metaphysical proof of God's existence from the point of view of motion. Though the notion of motion from Newtonian Physics denies the Aristotelian notion of motion, thus

if there is no study of where the difference lie in this important conception of motion, then the argument for God's existence based on the Aristotelian concept of motion will be doubtful. Psychology which is a part of Natural Philosophy works on the faculty of knowledge, an aspect of metaphysics which is called Epistemology. Epistemological problems depend on a good valid psychology which is a cogent part of natural philosophy. The problem or issue of relationship has been debatable on the grounds of demarcation criterion. Hume attempted to solve this problem but Kant made it a central problem of Epistemology. The Empiricists postulated the inductive procedure as criterion of demarcation. They posit that only ideas and notions derived from experience are scientific. Hence, any other is seen as pseudo-science (metaphysics). The positivists like the logical positivists propose verification as criterion of demarcation. Anything verifiable for them is scientific while anything that cannot be tested is perceived as metaphysics. While Natural Science and Metaphysics may on the surface seem as if they are incompatible, they actually can be seen as complimentary to each other.

Conclusion

By our discussion on the issue of Natural Science and Natural Philosophy, we may have observed that scientists drew their philosophical conclusion from their scientific findings. Outside our knowledge of the early philosophers of nature or the cosmological philosophers of the documented ancient Greeks, one of the greatest scientists that expressed the philosophical role of his science is the physicist, Werner Heisenberg. He is the author of The Uncertainty Principle In Quantum Mechanics. In his book Physics and Philosophy, he was able to compare the findings of Modern Science with the teachings of the Philosophers of Nature. Modern Physics is not independent of philosophy because scientific theories depend on certain assumptions which are Philosophical in character and at the same time Ontological or Epistemological.

Albert Einstein and Leopold infeld in their book: 'The Evolution of Physics', showed the connection of Aristotelian concept of motion in their discussion of motion. Thus, there is a relation between Philosophy of Nature, the physics of Aristotle and modern day physics.

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The biologist George Gaylord Simpson (Simpson 1964) gave a pretty strong testimony to the identification of Science and Philosophy in his book: *The View of Life*: “All Science is Philosophical, and the only philosophies capable of validation are those of scientists... A scientists cannot so much as make an observation without relying on a Philosophical premise”. From the foregoing, it will be better to say that Modern Natural Science is identical with the Philosophy of Nature and that any new scientific theory that emerges is also new philosophical theories.

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