THE LOGICAL RELATIONSHIP BETWEEN DETERMINISM AND SCIENCE AND ITS BEARING ON EDUCATION.

Towoju Kayode Timothy
Department of Arts and Language Education,Ekiti State University, Ado-Ekiti.

Abstract
This paper provides a clarification of determinism and science by showing how their nature affects each other. In the course of the explanation the logically necessary conditions of the concepts are explained in relation to education. The methodology of approach is conceptual analysis and this is the format into which philosophical arguments are fitted for proper clarification and elucidation. Then, the bearing of the logical clarification of determinism and science on the concept of education is elucidated from the practical point of views. The study proffers rapid scientific and educational development if the knowledge of science can be properly utilized to explore the materials provided by nature, so as to discover the powers of the natural laws in them.

Keywords: Concept, Motive, Nature, Mind Logical, Determinism,Science.

The Concept of Determinism

In this our living space, we can see and observe many natural materials and beings including ourself. Each of these organisms and the materials of nature have their pre-established principles, these we can equally call natural characters guiding their operations. These pre-established principles are guided by the Natural Laws (Determinism). To this, one can state that, Determinism is about nature and it is generally known as Law of universal causation. It is believed that, with the aid of this law that man can talk, water can dissolve solutes, air can be blown, living things can die, non-living things cannot die and the likes. These conditions are in progressive order in line with their necessity. In this wise, determinism may mean that everything that happens are determined by conditions either outside or within the natural objects, objects here mean both living and non-living organisms. If these principles have been established for us to determine our actions, then all that takes place according to them are pre-determined because whatever that is orderly is not free but only follows from pre-established principles. Uguigwomen (2012) comments that: All events and materials are governed by law of nature. These laws are not the type made by a legislature, rather they are statements of condition under which certain events or effects inevitably occurred and are still occurring.

In short, this condition of events may be unavoidable in that, it has been pre-established. This is because, all our actions and reactions are governed by immutable laws. To this, determinism may mean the belief that every event has antecedent cause and that no event is uncause. For examples, certain events occur in orderly pattern, examples of these are Carbon cycle, Nitrogen cycle, Water cycle, Digestion of food, Blood circulation, some chemical reactions, action and reaction forces, day and night. This is why it is possible to predict certain events.This implies that all human behaviour as well as the materials of nature require an adequate cause but that every cause is a necessity cause. In line with this, motives do not merely attract, they determine. It is not I who determined whether or not, I yield to the attraction of this or that motive, but that I "was conditions to acts".

Motivating forces don't only influence us but they often force us. This means that all our activities in science and the scientific activities are determined by force either outside or within us of which we have no control.In line with Pojman (2012), determinism is the theory that everything in the universe is governed by causal laws, that is everything in the universe is entirely determined so that whatever happens at any given moment is the effect of some antecedent cause. This is the basic presupposition of science in that it implies that: there is no such thing as an uncause event.
It therefore follows that the tenets of determinism can be stated as

(a) That every events have a cause or an antecedent cause, and there are no uncause events.
(b) That every events occur or happen in an orderly/regular pattern e.g man develops from embryo, formations of rain happen in an orderly pattern.
(c) That every similar events occur in regular or similar patterns and in stages e.g carbon cycle, nitrogen cycle, formation of a compound by process of chemical reaction/combination. Hence one can say chemical reactions occur only when elements combine and collide with each other.
(d) That laws and order prevails in the universe through universal law of causation eg day follow the night, water turns to vapour, fire burnt down any matter and even dry water up, when contained in a container or subjected to heat etc.
(c) That men have been pre-ordained with natural power to root out the value in the materials world. Man therefore, operates in line with the laws of nature.

From the above explanation, one can assert that, if determinism affirms that everything in the universe or world is governed by causal laws, it may be regarded as the foundation for modern science, then, if science is accepted as the system of material particles operating in line with the natural laws, then, everything in the world is entirely determined. In this sense, whatever that happens is regarded as the effect of some antecedent cause.

The Concept of Science

In any situation, when a man hears the word science, what probably comes to his mind is the name of some science subjects such as:- Chemistry, Biology and Physics that are likely being studied in our schools. These science subjects have some thing in common that account for their being grouped as "science".

Firstly, they are all body of knowledge with common methods. The method of science is the scientific method, it involves observation, data gathering technique, analysis of the data, making of generalization (hypothesis or tentative statement) and making of inference and conclusion. Secondly, science involves or make use of natural materials to analyse. The nature of these materials through the process of inquiry (asking questions) man make use of their natural powers to analyse the materials of nature and bring out sense in them. In this wise, science may be thought of as an inquiry into the nature and its various phenomena.

Maria (2007) therefore defined science as the concerted human efforts to understand, or to understand better, the history of natural world and how the natural world works with observable physical evidences as the basis of that understanding. One can therefore make a rejoinder that science is the reconstruction and reorganization of nature through observations and experimentations. Some aspects of nature are of permanence, if this is so, science can be said to be "a revolution in permanence, but if otherwise, the nature is thought of as changing then, science can be termed as reformation and reformulation of change in nature.

In line with Bernard (2007), science is the ordered knowledge of natural phenomena and the natural study of the relations between the concepts in which these phenomena are expressed.

Essentially, the logical deduction from the above can be stated as follows:

(a) Science aims at finding out the unifying order underlying the event around man.
(b) Science searches for the relationship that explains and predicts the behaviour of observable universe.
(c) Science aims at discovering and compilation of contemplation of truth about the natural phenomenon.
(d) Science is based on what we can see, touch, hear, taste, smell or feel, therefore, the personal opinions such as imagination, speculation, superstition, preference, have no place in science.

Generally, if science is concerned with the physical world and covered the general truths of the operation of the natural law, it can root out the unique characteristic of nature through its method of experimentation. To this, science can be thought of as a body of knowledge that roots out the pre-ordained values of nature with the aids of natural power following the nature of the natural law of the world.

Logical Relation Between Determinism and Science.

Science as the study of nature can not be autonomous and stand apart from nature. Human and scientific observations, feelings, beliefs, actions and reactions and the final judgments that are made are determined by the nature of the objects of knowledge as well as their fragmented body. This in fact, provides option for selection. Hence the judgment of our studies in science and scientific activities are based on the fact that all scientist's actions even their thoughts and procedures are governed by immutable law (determinism).

What to be taught in science have been predetermined and pre-organized by the nature. For example, what to be taught in Biology, Geography, Chemistry, Agric Science, Physics, Introductory Technology and the likes have been pre-determined and the properties of natural objects or organism have been pre-organized. All the materials we use in teaching emanate/originate from nature and this is the reason why science may be referred to as the study of nature. Categorically, one can insist that, what we teach in science and even the scientific activities, as well as the materials we use in teaching science or in the manufacturing of technological goods exist in the real world and are useful, reliable, valid, and rational as being appropriate to this world or to their corresponding region or aspect of the world. It is the nature that pre-powered, and pre-ordained these materials of the world with Natural Laws to determine their mode of operations. What they can become naturally, as well as what they can be naturally used for.

Man as a natural object is also operating with the natural laws, also makes use of these natural laws using their nature for his own comfortable living. For example, some plants such as cassia, cashew, are of medicinal values, while some are used as poison. Others may be of nutritive values. For class teaching of some subjects, if living things are not in existence, there would be no Biology as a subject. If there is non-living things there will be Chemistry and Physics and probably the activities in some science subjects might be probably reduced. Our sciences therefore,

deal with some aspects of the world and must be adapted and abide by it. For example, Okeke (2009) In stating Newton's First Law of motion affirms that:-

A body will continue in its present state of rest or if it is in motion will continue to move with uniform speed in a straight line, unless it is acted upon by force. It seems that a body moving with uniform speed in a straight line will continues to move, if not acted by a force, therefore, the body does not move forever. The body will surely come to rest because of the opposing force which is natural as determined by Natural Law.

Similarly, when a body is thrown up unto the air, its motion is opposed by air resistance and the pull of gravity which is the natural law – sooner or later, it returns to the earth. In consideration of the above, if the world is different, our science and scientific activities would be different and presently, may not be in existence. This is because to exist is to be known. Therefore, what is to be taught in science are conditioned by the limitation of the natural laws. Every scientific action and judgment are determined by the nature in which he may have option of selecting which areas of scientific activities to research upon.

The human intellects work in accordance with the law and are conditioned by it. The "will" which is the power in man that direct man's actions only acts in respect to the recommendation of the intellects, hence Omoregbe (1993) sheds more light to this when he stated that, a central presupposition to the emerging science was the idea of universal causation i.e the belief that every events has an antecedent cause and that there are no uncaused event. It was assumed that event occur in an orderly pattern which makes the formulation of causal law or natural laws possible.

One can assert that the contents of knowledge for the students in the school have their root foundation on what nature has provided. In this, the choice of the subject matter in science and scientific activities are made in all their totality and determined by causes which are outside the human power or control. In the teaching and learning of science, man has no alternative than to dance to the tune of nature since man cannot make choice outside what nature had provided.

From the above explanation therefore, determinism can be considered as the root foundation of science and the scientific activities. This is based on the fact that, through man's reasoning power, such aspect of human life as awareness, thinking, observation, talking, body of man, data gathering instrument and recording are in operations in line with natural laws. To this, man become scientists as he understands nature and he is able to work with it even without ability of perfection as only God is perfect.

The Bearing of Determinism and Science on Education

Education culturises the individual and aims at reconstruction of ideas. That is, it develops the senses and in-born capabilities to tap the pre-planned or pre-ordained gifts of nature in order to enhance man's comfortability. Through the scientific methods such as observation, making of hypothesis, transformation of ideas, educational developments may progress. To this, the application of scientific method, attitudes on the materials of nature helps in the transmission of viable knowledge. The bearings of science and determinism on education are based on the facts that science:-

(a) Investigates the truths of nature through scientific methods with all its powers/capabilities and resourcefulness. The ultimate reality of scientific and educational development is NATURE.
(b) Brings out the real values in the material world as it utilizes their nature to make life more bearable with the knowledge acquired through education either formal or informal.
(c) Makes scientific discoveries, investigations on the constituent composition of material world include the nature of man, in order to make teaching and learning possible. This changes the life of man and his physical condition. The reality of our education is of the external nature, all our programmes of education are based on nature of existing materials.
(d) Work towards the needs and interest of our people as nature gives chance and ways for utilization of material world to make progress for educational development. This brings suitable adjustment of individual to the environment. As man struggle for existence, nature offers or give ways to selective actions of the environment along with the survival of the fittest. In short, men is able to adapt to the environment using this natural ability to adjust. This is why, education is tagged as the process of individual adjustment and adaption to their environment.

Conclusion

Scientificendeavours is a two-cornered fights or struggles between the nature and human attributes. Education should be properly applied to improve the intelligent of individual as human attributes being controlled by the brains can be energized to power out the characteristics of the object of nature and bring out the values in them.This will equally improve educational developments and human comfortability. The world is officiating as the bedrock of knowledge which can be properly analysed, fractionalized and developed for human consumption, if the principles of science are intelligibly applied.

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