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RESEARCH ARTICLE

ANCIENT SCIENTIFIC METHODOLOGY.

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Abstract

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Scientific method cannot be strictly defined for it is a varying process which develops with time. The word 'Science' has its origin in the Latin word Scientia or Scire which means knowledge. The failure to appreciate and understand the true nature of science has caused much misunderstanding and unjustified criticism of the value of its methods. Science is systematized knowledge based on facts or truths known by actual experience or observation. It attempts to observe and describe facts and relate them to each other. It may also be regarded as a thoughtful search for reasons of natural events. In the west, the scientific method was first enunciated by Roger Bacon born about 1210 AD. He felt the need for experimental methods. He declared that the only way to verify or disprove any statement was 'to experiment and observe'. In 1543 AD, two books were published. One of them is De Humani Corporis Fabrica of Andreas Vesalius and De Revolutionibus Orbium Coelestium of Nicholas Copernicus. These books have become classics in the history of science. Both of these book initiated events that revolutionized science. Bacon regarded science as neither a luxury nor something to acquire fame or produce miracles, but to improve the condition of human existence. Bacon's view of scientific method was experimental, qualitative and inductive. He regarded the collection of a large body of facts as a prime requisite of an experimental method. Then any subject could be investigated by classifying facts relating to the topic.

In this paper we only discuss ancient Indian and Greek's Scientific methodology.

Ancient Indian Scientific Methodology:-

Research and investigations in any subject consists essentially of certain basic principles. These principles, for the first time, were investigated and formulated by an ancient Indian Philosopher scientist Aksapada Gotama. These have been embodied in the form of 'Nyaya Sutras'. Nyaya means analysis. Akspada Gotama is said to be contemporary of Buddha and Buddha, living during the sixth century B.C. Some believe that he belonged to a period earlier than 600 B.C.. Later some other scholars have worked on Nyaya Sutras. The Nyaya Sutras, for establishing the true fact, a phenomenon or an object consist of

Pratyaksha (Perception):-

Pratyaksha (Perception), is the recognition and knowledge of the objects, produced by their contact with external sense organs of sight, hearing, touch, taste, smell, with internal sense organs such as mind.

Anumana (Inference):-

Anumana (Inference), is the knowledge of the objects through the apprehension of some mark which is invariably related to the inferred objects. During this process, firstly there should be a relation of agreement in presence

(anyaya) between two things i.e. in all case where one is present, other should also be present. Secondly, there should be uniform agreement in absence between them (Vyatireka). Thirdly, no contradictory instance should be observed where one of them is present without the other (Vyabhicaragraha). Lastly, relevant hidden determining conditions (upadhi) and accompanying circumstances have to be taken successively, investigated and eliminated by repeated experiments and observations to establish an invariable concomitance (vyapti) between the mark and the character inferred. This is how one can obtain the knowledge which is valid and correct.

Upamana(Comparison):-

Upamana (Comparison) is the knowledge of the phenomenon or the object obtained by the establishment of a relation between a name and objects so named or between a word and its denotation. e.g. a boy is told that an animal with such and such description is a horse. When he sees an animal for the first time with particulars which fit in description, he concludes, by comparison that what he is seeing is a horse.

Aptavakya(Testimony):-

Aptavakya (Testimony) is a method of establishing the identity of an object i.e. the knowledge of the perceived and unperceived objects derived from the statement of authoritative sources viz. standard scriptures such as Vedas, the saying of the sages and the Research Journals. Here one must know as to how many interpretations, according to the individual way of thinking have been put forward and accepted by various scholars and people, to whatever is written in the Vedas. These interpretations have been sometimes poles apart but that has not in any infringed upon the profound veneration in which the Vedas are held. As regards the practical use of NyayaSutras,It is important that for Indians, theories and philosophies were not purely of academic interest. They were applied in many practical sciences. For example, practice and treatment in Ayurvedic medicine is extensively and elaborately based on Nyaya and other systems of Indian philosophies.

Ancient Greek’s Scientific Methodology:-

In ancient Egypt and Mesopotamia, Anything that happened was explained as the work of hidden hands. Different phenomena were explained as the work of different Gods. Diseases were assumed as caused by demons. Some of the first attempts to replace the doctrine of the hidden hands by practical modes of explanation were made by Greek philosophers around the sixth century BC. They attempted to explain natural phenomena in terms of the physical observations. They endeavored to introduce logos or reason in to the word around them. Their approach became a mixture of scientific, religious and philosophical reasoning. The Greek genius was deductive rather than inductive and was therefore at home in mathematics and geometry. They were good observers and hence helped in the advancement of astronomy. The most outstanding among the Greek scientists was Archimedes (287-212 BC) who wrote the book on floating bodies.

We can say that Early developments in the field of science were made during 600 B.C. to 200 A.D. This period can be divided into three parts as far as the scientific development is concerned. From 600 B.C. 400 B.C. there was the rise of science as a part of philosophy. From 400 B.C. to 200 B.C. great developments in anatomy, mathematics and astronomy were made, where extensive use of practical’s were not needed, mere observations and theories were considered enough. 200 B.C. to 200 A.D is period witnessed the decline of original work.

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