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EXPERIMENTAL METHODOLOGY THE INDUCTIONS OF FRANCIS BACON

Annotation: This article is devoted to the fact that it became a thinker who ensured the beginning of development, and it was in this philosophical source that he studied the ideas and thoughts about the unique education and upbringing expressed by the great thinker.

Keywords: Francis Bacon; reform; systematization; common law; precedent; statute;legislative machinery; logistics.

Introduction

Francis Bacon was an outstanding English philosopher, scientist and politician. Scientific research, philosophy of science and political activity reflect the multifaceted contribution and influence of Francis Bacon in various spheres of public life. His contributions to various fields of knowledge had a huge impact on the development of European thought and scientific method. One of his main works is the methodology of experimental induction Francis Bacon.

The methodology of experimental induction by Francis Bacon (1561-1626) was presented by him in his work "The New Organon" and includes the following principles: Rejection of a priori dogma: Bacon rejected an approach based on theoretical assumptions and a priori statements, believing that research should begin with pure observation and experimentation. The role of observation: Francis Bacon emphasized the importance of starting research by observing specific facts and phenomena of nature. He called for systematic data collection, especially where there are no established theories or hypotheses. Bacon believed that only through careful observation can the basic principles and patterns of the world be formulated.

The inductive method: Bacon put forward the idea of the need to use an inductive method, in which general conclusions are drawn from observations of specific cases and laws are formulated. Experiments: Bacon called for the active use of experiments to test hypotheses and create general laws. He considered experiment as an important tool for confirming or refuting inductive conclusions based on observations. The experiments had to be strictly controlled, repeatable, and allowing accurate and objective data to be extracted.

Verification: The principle of verification in Bacon's methodology indicates the need to verify the results and conclusions. This means that inductive conclusions must be subjected to additional tests and independent studies to ensure their correctness and reliability. Verification allows you to avoid erroneous interpretations and onfirm generalizations based on observations and experiments. Analysis and generalization: After conducting a series of observations and experiments, the data obtained should be analyzed, and general conclusions should be drawn. draw conclusions and formulate new hypotheses based on inductive conclusions.

Francis Bacon's methodology of experimental induction became an important stage in the development of the scientific method and promoted a more objective and systematic approach to

research based on observations and experiments, which ultimately influenced the development of science and technology.

These principles related to observation, experimentation, and verification play a key role in Francis Bacon's experimental induction methodology, ensuring the rigor, accuracy, and reliability of scientific research. Through systematic observation, experimentation, and verification of research results, Bacon sought to build a reliable scientific base on which to create common scientific theories and laws.

The first advantage is that universal experimental science "... explores the most important conclusions of all other sciences. Because they know how to discover their principles through experiment, but they come to their conclusions based on evidence based on the same principles. If they want to receive a specific and complete verification of their conclusions, it is necessary that they receive it with the help of this noble science. Indeed, mathematics has universal experience in verifying its conclusions by constructing figures and counting, which is applicable to all sciences and this experimental science, since no science can be known without mathematics. But if we turn to the results that are characteristic of this particular discipline, perfect and convincing for it, it is necessary to take into account the arguments of a science called experimental"". In other words, the first prerogative requires that the consequences of any science deduced from explanatory principles be subjected to independent and direct experimental verification. This increases their reliability and enhances the validity of the explanatory principles themselves. For Aristotle, deduction alone was sufficient as an explanation or prediction of the observed phenomenon.

As an illustrative example of the use of the first prerogative, A. Krosby cites Bacon's attempt to discover the cause of the rainbow. First, Bacon collected all the phenomena similar to the rainbow. This set includes: the refraction of sunlight in crystals, in dew droplets on leaves, in water splashes from a rotating mill wheel, from oars. Then he investigated the very phenomenon of the rainbow, noting that it always appears in clouds or fog. Combining observation, astronomical theory, and measurements using an astrolabe, he established that the rainbow appears in the opposite direction from the Sun, that the observer's eyes and the Sun are always in a straight line in the center of the rainbow, and that there is a clear relationship between the height of the rainbow and the height of the Sun above the horizon. Bacon showed that the rays returning from the rainbow to the eye form an angle of 42 degrees with the rays coming from the Sun towards the rainbow. To explain all these facts, he accepted the point of view of Aristotle, stated by the latter in Meteorology, that a rainbow is the base of a cone, the top of which forms the Sun, and the axis radiating from it through the observer's eye to the center of the rainbow. Depending on the height of the Sun, the base of the cone changes, i.e. the size of the rainbow. This explains the difference in the size of the rainbow at different times of the year. In addition, Bacon's theory implies that the sizes and colors of the rainbow are different for different observers. The rainbow moves with the observer relative to stationary trees, houses, etc. Therefore, for thousands of observers arranged in one row, Bacon proves, there are actually a thousand different rainbows.

The second advantage is that universal experimental science is able to actively and systematically use experiment to increase the volume of empirical data from all sciences and cognizable phenomena. In this way, it is able to discover truths that are inaccessible due to their private nature to other sciences. "It (the second advantage - Note by I.L. Vikentiev) lies in the

fact that only this lady of theoretical sciences can present great truths within the framework of these sciences, which these sciences cannot achieve by themselves in any way. Therefore, these truths do not belong to the essence of speculative sciences, but are entirely outside of them, although they are formulated within their framework, since they are not their beginnings and conclusions."

According to the third advantage, universal experimental science is able to create new techniques for collecting and analyzing data, testing hypotheses, storing and modifying old tools and skills, and constructing new ones. "The third advantage of this science lies in its special properties, thanks to which it explores the mysteries of nature with its own power, without correlation with other sciences. And this consists in two things: in the knowledge of the future, the past and the present, as well as in amazing things in which it surpasses the judgment of conventional astronomy... And this wisdom was invented as an ideal medicine against human ignorance and imprudence: indeed, it is difficult to obtain accurate and satisfactory astronomical instruments, and even more difficult to obtain reliable tables, those in which the equalized movements of the planets are indicated. And it's difficult to use these tables, and even more difficult to use the tools. But this experimental science finds definitions and ways by which it is easy to answer any question, as far as possible for a single faculty of philosophy, and through which it shows us the forms of the forces of celestial bodies and the impressions of celestial bodies in this world - without any difficulties inherent in conventional astronomy."

Thus, only universal experimental science is capable of fully exploring the secrets of nature, discovering knowledge of the past and the future. Bacon believes that the three prerogatives together outline a method of scientific knowledge more effective and reliable than the Aristotelian one. The new method focuses on the systematic collection of data, a significant expansion of the class of verifiable effects, the creative nature of the experiment, and the absence of fundamental boundaries between experience, intelligence, and invention in science.

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