

Bacon, novum organum, and implied objectivity – philosophy of science

[Philosophy](#)



Francis Bacon was a representative of English Renaissance and therefore sought to tie together philosophy and science in order to create more complete and clear picture of scientific method to be used when explaining natural phenomena. Bacon's "Novum Organum" is can be viewed as a global message addressed to all scholars and students, who seek to penetrate into the true order of matters and nature of objects, as the primary idea of his writing is to assist scientists in developing objectivity and destroying prejudices and stereotypes that determine unnecessarily narrow directions or limitations in certain areas of knowledge.

The first chapters of the writing are dedicated to aphorisms, which to great extent reflect the spirit of the epoch and the author's personal convictions. First of all, the scholar suggests that the study of nature is extremely complicated and should be approached from multiple viewpoints: "The study of nature with a view to works is engaged in by the mechanic, the mathematician, the physician, the alchemist and the magician; but by all (as things now are) with slight endeavor and scanty success" (Bacon, Book I, Aphorism V, at www.constitution.org, 2001).

This means, it is important to expand the knowledge about nature and establish a reasonable exchange among various disciplines and directions – first of all, in order to be capable to explain the issues, which might be clear in certain discipline, but remain a 'white spot' in another, so that the true causes of phenomena can be found only through developing a complex approach.

On the other hand, the author also warns the reader against hastiness in scientific conclusions that can appear a side effect of syllogism "...if the <https://assignbuster.com/bacon-novum-organum-and-implied-objectivity-philosophy-of-science/>

notions themselves (which is the root of the matter) are confused and overhastily abstracted from the facts, there can be no firmness in the superstructure. Our only hope therefore lies in a true induction" (Bacon, I, XIV, at www.constitution.org, 2001). This means, it is important to 'digest' all information available, gradually put forward the propositions and construct the superstructure thoroughly, without superfluous generalizations.

This means, there is a certain divergence between traditional techniques, related to scientific induction, and the mode of logical reasoning Bacon offers: for instance, syllogism contains a particle of subjectivity, as it is normally based upon propositions, hypotheses and the scientist's own perception of the object: " In order to penetrate into the inner and further recesses of nature, it is necessary that both notions and axioms be derived from things by a more sure and guarded way, and that a method of intellectual operation be introduced altogether better and more certain" (Bacon, I, XVIII, at www.constitution.org, 2001).

Due to the fact that the author speaks primarily about precise sciences, he implies that science as organized area of knowledge cannot be based purely upon hypotheses or fantasy, but also upon facts and axioms. The main obstacle to the real discovery of nature is described by Bacon as four idols living in human mind. Idols are conceptualized as human impressions about the objects, - for instance, their visible characteristics like color or shape. The author contrasts idols to God's intents concerning the creation of nature, i. e. these idols substantially distort or misrepresent the truth.

There are four main types of these erroneous subjectivist convictions: Idols of the Tribe; Idols of the Cave; Idols of the Marketplace (Forum) and Idols of the Theatre. The Idols of the Tribe are in certain context socially approved convictions, as they all derive from the idea that human-being is a measure of the objects surrounding them, so that individuals tend to approach to nature from the position of their relation to certain objects or phenomena: for instance, ancient ‘ scientists’ believed that celestial bodies existed in order to predict their fate, i. e.

humankind used to have consumerist attitude towards their environment, which resulted in numerous hardships when it was the time to broaden or enrich the knowledge available. In addition, these beliefs are transmitted from generation to generation and learned during socialization – this is probably their most dangerous aspect. “ The Idols of the Cave are the idols of the individual man. For everyone (beside the errors common to human nature in general) has a cave or den of his own, which refracts and discolors the light of nature...” (Bacon, I, XLII, at [www. constitution. org](http://www.constitution.org), 2001).

This means, Idols of the Cave can be explained as the peculiarities of each person’s psychological world, which might decrease one’s ability to draw independent conclusions – human are often ‘ addicted’ to persons they admire and therefore might view these persons’ beliefs as their own. The Idols of the Marketplace originate due to the use of common language and social relationships, yet “ words plainly force and overrule the understanding, and throw all into confusion, and lead man away into numberless empty controversies...” (Bacon, I, XLIII, at [www. org](http://www.org)).

constitution. org, 2001), which means first of all that there is certain issues human being cannot verbalize or put into words. In addition, individuals tend to misuse and abuse language, for instance in demagogic or pseudoscientific discussions, which in reality have no visible objectives and goals. Finally, the Idols of the Theater settle down in human mind under the influence of philosophical dogmas or 'universal truths', often imposed by theatrical fables.

For instance, in certain epoch, individuals used to say: " Love is stronger than death", " Love is the highest feeling", even through it is really hard to measure the ' height' of love or imagine that it can really save individuals from inescapable death. These expressions were no more than metaphors, suggested by literature or certain philosophical movements. All these Idols contribute to the development of human subjectivity and inability to ignore unnecessary parts of their experiences when examining pure facts.

In addition, explaining the cause of underdevelopment of scientific method, Bacon also takes macrosocial approach and identifies two main factors, which contributed to the weakness of contemporary science: firstly, a lot of vital information had been lost or had not been fixed on paper, so that contemporary science actually originated in Greco-Roman period; secondly, the development of natural science in general had been overlooked, in contrast to the progress of art and literature, due to the domination of religious institutions over education and scientific progress, which had implied strict censorship.

In order to liberate human mind from the aforementioned idol, it is necessary to develop a new method of establishing axioms: " In forming our axioms <https://assignbuster.com/bacon-novum-organum-and-implied-objectivity-philosophy-of-science/>

from induction, we must examine and try, whether the axiom we derive only be fitted and calculated for the particular instance from which it is deduced, or whether it be more extensive and general” (Bacon, I, CVI, at www.constitution.org, 2001). As one can understand, scientific reasoning should be based upon the basic research and supplementary study of the validity of previous one and the possibility of generalization.

If generalization is possible, “ we must observe, whether it confirm its own extent and generality, by giving surety as it were, in pointing out new particulars” (ibid). In order to facilitate the research, the scientist should first examine the cause of the phenomenon or its separate features (color or size), since the same characteristics not always point to the same cause and therefore do not infer the same nature of the object or phenomena. Bacon’s inductive technique includes three main components, or three different types of table: the table of presence, the table of absence and the table of degrees.

The table of presence includes all cases in which the phenomenon, whose cause is sought, manifests itself: for example, heat appears when the object is under the sun. The table of absence comprises the cases in which the phenomenon does not manifest itself: for instance, although the moon spreads light, the heat does not appear in moonlight. Finally, the table of degrees provides concrete measurements of the phenomenon and includes its decreases and increases among different objects or materials: for instance, certain metals heat slower than liquids (e. g. water).

The table of degrees is aimed at reflecting the extent of the phenomenon in each object researched. In case the amount of research material is limited, <https://assignbuster.com/bacon-novum-organum-and-implied-objectivity-philosophy-of-science/>

Bacon offers different strategies of induction: “ I propose to treat, then, in the first place, of Prerogative Instances, secondly, of the Supports of induction, thirdly, of the Rectification of Induction; fourthly, of Varying the Investigation according to the nature of the Subject; fifthly, of Prerogative Natures with respect to Investigation; [...]; sixthly, of the Limits of Investigation, or a synopsis of all natures in the universe..

” (Bacon, II, XXI, at [www. constitution. org](http://www.constitution.org), 2001). In addition, he recommends that each scientist included suggestions for practical use and the gradation of axioms. Prerogative Instances, or objective facts and their independent interpretations are therefore regarded as the most important aspect of induction, as the basic Prerogative Instances are in fact to demonstrate the extent of the phenomenon in each particular case, the interrelation among the phenomena in different objects and situations and the possible exclusions or exceptions.

To sum up, both extended and limited investigations should be based primarily upon facts and their classification, rather than upon hypothetical reasoning and classic induction whose main constituent is syllogism, or logical propositions, not always confirmed by facts. Reference list Bacon, Francis. *Novum Organum* (The New Organon). Available online at: [http://www. constitution. org/bacon/nov_ org. htm](http://www.constitution.org/bacon/nov_org.htm), 2001