

Comparison  
of  
Empirical and Deductive Methods  
of  
Scientific Inquiry

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In the early seventeenth century, the natural philosophy of Aristotle, which holds that when natural phenomena are studied, appearance is truth or understanding, was being challenged by two different methods of scientific inquiry. The investigative systems of Francis Bacon and René Descartes have similar aspects but differ in the direction in which they proceed to perceive the truth. This paper will examine and explain the differences and similarities that comprise each of the approaches.

Francis Bacon was a practitioner of the empirical method of the time. This system melded inductive reasoning with repeated experimentation. The focus was to identify a general principle using meticulous, methodical examination of the results of experiments with specific examples of phenomena. He believed that our senses and how we perceive the world is greatly influenced by what he called “false notions” or “idols” that “frequently led to fundamental errors” (Sayre 708). First, the observer could be misled by their senses and that inaccurate conclusions would be the result. He viewed this as a common problem in human nature. He rejected the notion that things are as they appear. Second, the personal makeup, education, and the environment in which the observer was raised would have an effect. “An individual’s religious faith or sense of his or her ethnic superiority or inferiority” (Sayre 708) would shape the view of the observer by forcing conclusions to fit preconceived ideas. Third, an observer must avoid conveying hidden bias or meaning due to the words chosen to communicate information. The result would be a misunderstanding or misinterpretation of the observation thereby arriving at an erroneous conclusion. Last, Bacon viewed past, present, and future “dogmas of philosophy” (Sayre 708) as corrupting influences and would prevent an observer from reaching the correct conclusion solely because past traditions or beliefs have persisted in thought and have been accepted as fact, even though there may never have been evidence to support a particular idea.

French mathematician René Descartes approached his conclusions based on deductive reasoning, which can be stated as taking “clearly established general principles and [moving] from those to the establishment of particular truths” (Sayre 709). The direction of investigation moved from specific to general which is the opposite of inductive reasoning. Descartes felt that there was a duality in man that manifested as complementary aspects—mind and matter—combined to form a whole from the parts. Like Bacon, he believed an observer could be misled by their senses and that they should rely on reason and intellect to arrive at true conclusions. The first principle from his writing *Discourse on Method*, is a well-known phrase “*Cogito, ergo sum*” or “I think, therefore I am” (Sayre 709). His reasoning or proof for the existence of God can be summarized as: 1) I can imagine God. 2) The idea of God represents an infinite being. 3) The source of the idea of an infinite being could only come from an infinite being. 4) Therefore, that infinite being must exist and is God or “the mathematical order of nature” (Sayre 709).

Both the empirical method and the deductive method distrusted man’s sense and his ability to rely on them for accurate perception. The empirical method arrives at general conclusions by way of testing and experimentation that yields consistent results. The deductive method requires man to use his intelligence to discern the truth of specific examples using general ideas as a starting point.

## **Works Cited (Bibliography)**

Sayre, Henry M. *The Humanities. Culture, Continuity and Change*. Book 4. Saddle Rock, NJ: Prentice Hall, 2012. Print.