

A Critical Investigation of the Methods of Science with Special Reference to the Method of Abduction in the Construction of Theories

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It is undisputed that the most powerful knowledge system at present is the Western Science and the Technology based on that science. Then invariably the question arises as to whether there is a specific method (or methods) which is (are) peculiar to science. Western Science originated in Europe in around the 17th Century A.D. and ever since philosophers of science have proposed four main methods namely Induction, Deduction, Verification and Falsification. Two main schools (traditions) of philosophy namely Empiricism and Rationalism emerged during the 17th Century A.D. According to Empiricism, sense experience is primary in gaining knowledge. According to Rationalism, mental faculty is primary in gaining knowledge. It is also widely accepted that the method of induction and the method of verification belonged to Empirical tradition and the other two methods Deduction and Falsification belonged to Rational tradition. Another method namely 'Abduction' was proposed by the Charles Peirce in 1903 but it was largely neglected because Abduction was considered to be much similar to Induction. But recently the method of abduction has gained much recognition and interest among the philosophers of science. In this research paper the limits and drawbacks of the four well known methods are critically investigated and also the importance of the method of abduction in the construction of theories is discussed in depth. Newton's theory of gravitation is considered in this research paper as a case example to understand roles played by abduction, induction and deduction in the construction of that theory.

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