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Scientific Method

The classical exposition of the inductive method (originally due to William of Occam) is as what are now called Mill's Canons, the two most important of which are:

* The Canon of Agreement, which states that whatever there is in common between the antecedent conditions of a phenomenon can be supposed to be the cause or related to the cause of the phenomenon

* The Canon of Difference, which states that the differences in the conditions under which an effect occurs and those under which it does not must be the cause or related to the cause of that effect.

In addition, the method relies upon the Principle of Accumulation, which states that scientific knowledge grows additively by the discovery of independent laws, and the Principle of Instance Confirmation, that the degree of belief in the truth of a law is proportional to the number of favourable instances of the law.

In addition to the inductive method outlined above, the scientific method includes the range of analytical methods subsumed within Popper's Doctrine of Falsifiability. This regards science as moving forward through the experimental falsification of existing belief structures. Finally to the methods of inductive reasoning we must add considerations of Plausibility of Mechanism.

These are the methods of science (Mill, 1879; Popper, 1962, Harré, 1985; Papineau, 1996)