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INTRODUCTION

The Philosophy of science is an emerging area and can be traced back to Plato and Aristotle. With the rise of science in the sixteenth and seventeenth century, scientific thinking expanded on the question of how experiment and hypothesis could lead to knowledge. The most influential contribution of the new science was Francis Bacon’s "Novum Organum" first published in 1620, which formulated rules for discovering causal laws from experimental observation. Through the seventeenth and eighteenth centuries, controversies about scientific views were intermixed with controversies about methodology, for example debate between Cartesian and Newtonian about
celestial mechanics and the appropriate role of hypothesis.

In the first half of the nineteenth century, three major works defined the philosophy of science. In 1830, John Hershel published his preliminary discourse on natural philosophy which accommodated both Baconian discovery of causal laws from observations and the use of hypothesis that go beyond what is observed. William Whewell’s philosophy of the inductive science published in 1840 contained insightful discussions of the importance of scientific concepts and explanatory theories. But in 1843 J S Mill published first of many editions of his system of logic which proved to be more in keeping with the empiricist temper of the time. Then in 1920 and 1930 there emerged a school in Europe consisting of very talented philosophers of science known as “Vienna Circle”
advocating a doctrine that come to be known as “Logical Positivism”. It is often said that Positivism emerged as a response to the metaphysical excesses of Hegel and his neo Hegelian successor who sought to explain reality in terms of metaphysical entities, which did not admit of empirical specifications.

Most of the logical positivists hold that scientific theories are to be understood as set of axioms in formal deductive systems. Theories are confirmed by deciding their consequences from the axioms and checking to see whether the predictions hold. This methodology is called Hypothetic Deductive because it emphasizes the use of hypothesis to make predictions.

Popper (1959) was agreed with logical positivists on the issue of hypothetical deductive reasoning, however he differed on the role of
prediction to be used to falsify theories, not to confirm them. The schema may be expressed in the following way.

Start with hypothesis “H”.

Use logic to deduce predicted observation “O”.

If “O” is observed then “H” is confirmed (Hempel).

If “O” is not observed “H” is falsified (Popper).

The logical positivist movement had great influence in philosophy and science but in the late 1950s it came under the severe attack to some of its central tenets.

Toulmin (1953) & Hanson (1958) criticized the hypothetical deductive account of theories and argued that theory and observations were much more intertwined then empiricist allowed.

In 1962, the first edition of Thomas Kuhn’s *structure of scientific revolution* appeared and became the most influential work in the
philosophy of science of the succeeding decades. Kuhn talked of paradigm, a conceptual scheme that governs not only how we see the world but even in some of his pronouncement how the world is. Kuhn, Feyrabend and others used historical analysis to show that elegant analysis of scientific theories that logical positivists offered bear little relation to scientific practice.

Today’s philosophy of science is characterized by variety of approaches. In methodology, some philosophers look more to history, others to logical analysis.

I have not taken anything new but a general survey of logical positivism that how it emerged and its consequence upon the philosophy of science thereof.

Revolutionary new views concerning science have been advanced by Feyrabend, Hanson,
T.S. Kuhn, Toulmin and others. Each holds that transition from one scientific tradition to another force radical change in

(a) what is observed.

(b) In the meaning of the terms employed.

There is a much similarity in the views of these thinkers. Each adopts the meaning variance position with regards to most scientific transitions. Their interpretations of science would seem to eventuate in relativism. It would become impossible as a consequence of their views to compare any two different scientific theories. Scientific transition would become complete and incommensurable replacement. So the new philosophy of science and their approaches brought out such features of science, which clearly conflict with traditional forms of logical empiricism. The logical empiricist tradition has tended to view
the history of science as virtually irrelevant to the philosophy of science. It tended to look on the history of science as a chronological record of the slow removal of the obstacles to scientific progress.

Further logical empiricists resorted in particular to the presumably neutral and meaning invariant observational language employed by different theories. On the other hand radical meaning variance theorists have rejected this notion.

In short we can say that the logical empiricist traditions have over emphasized the invariance of meaning in scientific change. Actual science however does not proceed in this way. After scientific revolutions, scientists do use scientific terms in some new ways. One can say
that the terms employed by successive theories have changed meaning to some degree.

In accordance with the topic of my thesis, I would like to choose first to put the Kuhn’s account of the dynamic of scientific growth followed by the problems of meaning variance and incommensurability.

Kuhn describes scientific discovery as a sequence of normal science, crisis, revolution and new normal science. We can sketch the dynamics of scientific growth in the following way


In normal science, scientist revises theories for resolving anomalies using fixed paradigm and a fixed language. But from time
to time, however, crisis occurs when scientists fail to cope with the anomalies observed. When crisis occurs, a revolution is needed in scientific investigations followed by a paradigm shift in which new language is adopted after which a new normal science starts. So we can say that Kuhnian notion of scientific growth is the development of new paradigm and its competition with the older one constitutes a scientific revolution. Kuhn further went to say that the rival paradigms are incommensurable, meaning scientists in each paradigm would not be able to engage in rational dialogue across the boundary. Scientists in different paradigm according to Kuhn live and work in different worlds. So the introduction of the new paradigm paves the way for the creation of concepts through which to comprehend, to communicate about physical
phenomena, constitutes much of the scientific enterprise. Concept plays a central role in the construction and testing of the laws and the principles of a theory. The introduction of the new concepts and the alterations of the existing ones are a crucial state in most changes in theories.

Thus our understanding of science is seriously deficient if we fail to examine the question of how scientific concepts emerged and are subsequently altered. This is especially notable in view of the fact that problems of conceptual change in science in the form of the “Meaning Variance” have dominated so much in post positivistic philosophy of science. So my endeavor in the present work would be to examine in particular the process of meaning change. If one throws an eye in the post positivistic philosophy
of science, one can find that change of meaning is the result of scientific revolution i.e. it takes place in such a way that the concepts of the new theory completely replaces those of the previous. But in the realm of the positivist’s framework, account of meaning and meaning change in science erected no problem. Now I have to concentrate on my problems related to the topic to reach up to the solution of the problem, I first take up the Kuhnian notion of meaning change.

The second chapter will explore how Kuhn differs from Logical Positivist’s account of meaning Invariance and in what respect he propounded his theory of meaning variance in the form of paradigm shift.

In the third chapter, the author wishes to analyze the notion of few eminent post Kuhnian thinkers such as Imre Lakatos, Larry Laudan, C R
Kordig, Mark A Stone, John Watkin to see how they established their position in comparison to Kuhnian Notion.

At the stage of concluding my work, I argue that the Kuhn’s model of Meaning Variance in the form of paradigm shift is highly appealing and it may provide a major breakthrough in scientific progress.
References


2. Ibid. PP : 98-99

3. Ibid. PP : 286-87


