

An Analysis of Paul Feyerabend's Incommensurability Theory

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DOI: 10.56201/jhsp.v8.no2.2022.pg25.39

ABSTRACT

This article focuses on an analysis of Paul Feyerabend's incommensurability theory. Paul Feyerabend and Thomas Kuhn are the proponents of incommensurability theory in contemporary philosophy of science, though their views on incommensurability thesis are not exactly the same. Incommensurability theory is one of the major contributions of Paul Feyerabend in philosophy of science. The fundamental questions are: What actually does Feyerabend mean by incommensurability of fundamental scientific theories? Do the meanings of scientific concepts change when scientific theories change? Do scientific theories affect the meanings of scientific concepts? How does Feyerabend's incommensurability theory differ from that of Thomas Kuhn? Has Feyerabend's incommensurability theory any implication for scientific development? What are the strengths and weaknesses of Feyerabend's incommensurability theory? These and other related issues are the central focus of this article. Employing basically analytical method, this article examines Feyerabend's incommensurability theory. This study discovers that Feyerabend's incommensurability theory has both relationship of similarity and dissimilarity with that of Kuhn, and at the same time has implications for scientific development. It also argues that Feyerabend's idea leads to relativism and subjectivism. The researcher concludes that though Feyerabend's incommensurability theory has some shortcomings, Feyerabend is a force to reckon with in contemporary philosophy of science as a result of his innovations and revolutionary ideas in the discipline.

INTRODUCTION

Paul Karl Feyerabend is an outstanding scholar in the history of contemporary philosophy of science. He contributed immensely towards the development of knowledge in philosophy of science. Among his remarkable ideas in contemporary philosophy of science is his controversial incommensurability theory. In the words of Farell (2003) "The thesis of incommensurability is probably the most famous of Feyerabend's doctrines." (p.72) Paul Feyerabend and Thomas Kuhn are the strong proponents and advocates of incommensurability theory in contemporary philosophy of science, though their ideas on incommensurability thesis are not exactly the same. However, the common factor is that their ideas differ remarkably from the ideas of other contemporary philosophers of science. According to Feyerabend (1970):

With the discussion of incommensurability, I come to a point of Kuhn's philosophy which I wholeheartedly accept. I am referring to his assertion that succeeding paradigms can be evaluated only with difficulty and that they may be altogether incomparable, at least as far as the more familiar standards of comparison are concerned (they may be readily comparable in other respects). I do not know who of us was the first to use the term 'incommensurability' in the sense that is at issue here. It occurs in Kuhn's *'Structure of Scientific Revolutions'* and in my essay 'Explanation, Reduction and Empiricism' both of which appeared in 1962. I still remember marveling at the pre-established harmony that made us not only defend similar ideas but use exactly the same words for expressing them... In these discussions we both agreed that new theories, while often better and more detailed than their predecessors were not always rich enough to deal with all the problems to which the predecessors had given a definite and precise answer... We also saw that it might be extremely difficult to compare successive theories in the usual manner, that is, by an examination of consequence classes. (pp.219-220)

Obviously, both of them employed the concept of incommensurability in the context of the relationship between different or successive scientific theories in the course of scientific development. It is difficult to establish who officially and publicly employed the concept first in the context of philosophy of science. It has to be noted that Feyerabend had conceived his idea of incommensurability many years before his meeting as well as consequent discussion with Thomas Kuhn, and had even discussed such idea with the Kraft Circle prior to his encounter with Kuhn on the matter. Attesting to this, Oberheim and Hoyningen (2018) state:

Although Feyerabend first used the term 'incommensurable' to describe successive scientific theories in 1962, he had been developing his conception of incommensurability for about a decade prior to meeting Kuhn in the late 1950s. According to Feyerabend, he first discussed his notion of incommensurable concepts with the Kraft Circle from 1949–1951, while working toward his doctoral thesis on protocol statements (Feyerabend 1951). The Kraft Circle was a student group named after Feyerabend's Ph.D. supervisor Viktor Kraft, which was modeled after the Vienna Circle of which Kraft had been a member...(para. 27)

Furthermore, on the controversy surrounding the first scholar to use the term 'incommensurability' in the context of philosophy of science, *New World Encyclopedia* (2017) notes that Feyerabend first presented his notion of incommensurability in 1952 to Karl Popper's LSE seminar" (para. 7). This further demonstrates the fact that Feyerabend had conceived the idea of incommensurability prior to his meeting and discussion with Thomas Kuhn. Be that as it may, what is to be noted is that both Paul Feyerabend and Thomas Kuhn are the outstanding proponents of incommensurability theory in contemporary philosophy of science. However, this article centers mainly on Paul Feyerabend's concept of incommensurability. The basic questions that are scholarly very pertinent in this article are: What exactly does Feyerabend mean by incommensurability? How does his idea of incommensurability differ from that of Thomas Kuhn? How does Feyerabend apply the idea of incommensurability in the context of the

relationship between different or successive scientific theories? What is the implication of Feyerabend's incommensurability theory for scientific development? These and other allied issues are the basic focus of this article, and they are to be given scholarly attention in this discourse.

This article is partitioned into four major sections. The first section discusses Feyerabend's incommensurability theory. The second section examines Feyerabend's response to the arguments against incommensurability thesis. The third section examines the relationship between Feyerabend's incommensurability theory and that of Thomas Kuhn. The fourth section is the evaluation as well as the conclusion of the article.

PAUL FAYERABENDS' INCOMMENSURABILITY THEORY

Incommensurability is a very controversial theory in contemporary philosophy of science. The term 'incommensurability' is the opposite of 'commensurability'. Hence, knowledge of the meaning of the term 'commensurability' places one in a better position to understand the meaning of incommensurability. According to New World Encyclopedia (2017), "Generally, two qualities are commensurable if both can be measured in the same unit of measurement." (para. 1). This implies that two commensurable theories can easily be measured. Incommensurability is in contradistinction to commensurability. Thus, two incommensurable theories cannot be measured with the same standard of measurement. In the domain of contemporary philosophy of science, "two theories are said to be incommensurable if there is no common theoretical language that can be used to compare them." (New World Encyclopedia, 2017, para. 2) This shows that the language of a particular scientific theory is different from that of another scientific theory.

The term 'Incommensurability' was popularized in contemporary philosophy of science by Thomas Kuhn and Paul Feyerabend. They applied the term to articulate the nature of the relationship between two different scientific theories, though each of them propounded different versions of the theory. There are both similarities and differences in their versions of the theory. Attesting to this, Feyerabend (1962) states:

While the present paper was in progress I had an opportunity to consult various as yet unpublished papers by Professor T. S. Kuhn (Berkeley) in which the noncumulative character of scientific progress is illustrated very forcefully by historical examples. Despite some important and perhaps unalterable differences, the area of agreement between Professor Kuhn and myself seems to be quite considerable. One most important point of agreement is the emphasis which both of us put upon the need, in the process of the refutation of a theory, for at least another theory. (p.32)

Certainly, Feyerabend has a well-articulated version of incommensurability theory which is not exactly the same with that of Thomas Kuhn. It ought to be noted that many scholars such as Pierre Duhem, Niels Bohr, Albert Einstein and Wolfgang Kohler influenced Feyerabend very much in the formulation of his incommensurability theory. Also, Oberheim (2005) notes that "...the main issues that shaped Feyerabend's development of the notion of incommensurability

prior to 1962 include the contextual theory of meaning and Gestalt psychology.” (p.363) Hence, it could be said that some of his views on incommensurability were not original to him. For instance, Feyerabend confessed that Niels Bohr influenced him very much in the formulation of the theory. According to Oberheim and Hoyningen (2018):

In his autobiography, Feyerabend acknowledged Niels Bohr’s direct influence on the development of his notion of incommensurability in the 1950s. Feyerabend recalled a conversation in which Bohr had talked about the discovery that the square root of two cannot be an integer or a fraction. According to Feyerabend, Bohr presented the event as having led to the extension of a concept of number that retained some properties of integers and fractions, but changed others; and claimed that the transition from classical to quantum mechanics was carried out in accordance with precisely this principle (1995, 78).(para. 33)

Paul Feyerabend used the term ‘incommensurability’ formally in 1962 in his work *Explanation, Reduction and Empiricism*, though he conceived the idea earlier than then. He argues that two different universal scientific theories are inconsistent with each other, and one cannot be explained or evaluated in terms of the other. Just like Thomas Kuhn, Feyerabend articulated his idea of incommensurability theory within the context of scientific development in opposition to logical positivists’ linear or cumulative notion of scientific development as well as their idea of conceptual conservatism in the course of scientific development. Logical positivists maintain that scientific concepts retain their meanings in the course of scientific development such that a particular scientific concept has the same meaning in different scientific theories. Feyerabend argues against such and insists that meanings of scientific concepts are not the same in different scientific theories. According to Oberheim (2005):

Focusing on the function of the notion of incommensurability common to Feyerabend’s various critiques explicates Feyerabend’s early philosophy as a series of challenges to forms of conceptual conservatism based on the idea that in the course of scientific advance, when fundamental theories change, meanings change, which can result in a new conception of the nature of reality. (p. 363)

This entails that a particular scientific concept may have different meanings in two different theories. Feyerabend also upholds this argument in the context of his critique of logical positivists’ or logical empiricists’ method of scientific explanation. In order to establish his point properly, he argues that a judgment involving a comparism of the content of different fundamental scientific theories is quite difficult. Such difficulty in comparism is as a result of the fact that the theories in question do not have things in common. The transition from one scientific theory to another involves changes in the meanings of the terms in the theories. Thus, Feyerabend (1962) states: “In short: introducing a new theory involves changes of outlook both with respect to the observable and with respect to the unobservable features of the world, and corresponding changes in the meanings of even the most “fundamental” terms of the language employed” (p.29). Such changes in meaning of terms bring about difficulty in comparing different scientific theories. Illustrating further the change in meaning of terms as well as the inherent modification that occurs as a result of transition from one scientific theory to another,

Feyerabend (1962) categorically maintains that: “After all, it has been my contention all through this paper that extension of knowledge leads to a decisive modification of the previous theories both as regards the quantitative assertions made and as regards the meanings of the main descriptive terms used.” (p.79) It becomes obvious from Feyerabend’s specification that particular concepts have different meanings in different scientific theories, and such difference accounts for their incommensurability. This view is rooted in Feyerabend’s assumption that terms or concepts derive their meanings from the host theory. According to Preston (2020):

Feyerabend defended a realism according to which “the interpretation of a scientific theory depends upon nothing but the state of affairs it describes” (*Philosophical Papers, Volume I*, p. 42). At the same time he claimed to find in Wittgenstein’s *Philosophical Investigations* a contextual theory of meaning according to which the meaning of terms is determined not by their use, nor by their connection with experience, but by the role they play in the wider context of a theory or explanation. (para. 53)

Besides, it ought to be noted that the perceptual worldview of scientists are deeply influenced by the theory in question. Hence, ‘theory’ is very fundamental in scientific investigations. This implies that the scientific theory has a lot of influence on the scientists that conduct their research within the provisions of the theory. Consequently, Feyerabend insists that successive fundamental scientific theories are incommensurable. Analyzing Feyerabend's usage of the term ‘incommensurability’ and its implications, Oberheim and Hoyningen (2018) states:

Feyerabend used the notion of incommensurability to characterize the relation between two successive fundamental, universal scientific theories interpreted realistically; i.e. as purported descriptions of reality. By limiting incommensurability to universal theories, Feyerabend meant only those that apply to all objects in the universe. By limiting incommensurability to fundamental theories, Feyerabend meant those that have ontological implications; i.e., those that have implications about the very nature of reality. Universal, fundamental scientific theories can be incommensurable only if they are interpreted realistically, according to Feyerabend, because otherwise they cannot compete as the one true theory, and are thus not mutually exclusive. By calling two such theories incommensurable, Feyerabend meant that they were conceptually incompatible: The main concepts of one could neither be defined on the basis of the primitive descriptive terms of the other, nor related to them via a correct empirical statement (1962, 74, 90). As a consequence, it is impossible to reduce incommensurable theories formally. (para. 23)

Feyerabend limited his notion of incommensurability to only universal scientific theories. This is one of the areas where his version of incommensurability differs from that of Thomas Kuhn. More detailed attention will be given to this in the later part of this article. He further illustrated

his idea of incommensurability using the classical celestial mechanics and the special theory of relativity. In his words:

As an example of two incommensurable theories let us briefly discuss classical celestial mechanics (CM) and the special theory of relativity (SR). To start with one should emphasize that the question ‘are CM and SR incommensurable?’ is not a complete question. Theories can be interpreted in different ways. They will be commensurable in some interpretations, incomparable in others. Instrumentalism, for example, makes commensurable all those theories which are related to the same observation language and are interpreted on its basis. A realist, on the other hand, wants to give a unified account, both of observable and unobservable matters, and he will use the most abstract terms of whatever theory he is contemplating for that purpose. This is an entirely natural procedure. SR, one would be inclined to say, does not just invite us to rethink *unobserved* length, mass, duration, whether observed or unobserved, observable or unobservable. Now extending the concepts of a new theory *T* to all its consequences, observational reports included, may change the interpretation of these consequences to such an extent that they disappear from the consequence classes of earlier theories. These earlier theories will then all become incommensurable with *T*. (Feyerabend, 1970, pp.220-221)

Feyerabend attests that scientific theories can be interpreted in diverse ways. Given the different ways of interpretation, two theories can be commensurable and at the same time incommensurable, depending on the method of interpretation. This point was illustrated above using the instrumentalist’s and realist’s methods of interpretation of theories. This implies that the commensurability or incommensurability of theories may be dependent on the method of interpretation one employs.

An essential aspect of Feyerabend’s incommensurability theory is his argument that the meaning of concepts are not the same in two different theories as earlier stated. It is scholarly pertinent to give this a detailed attention in this discourse. Feyerabend argues consistently that a particular concept may mean one thing in a scientific theory and mean completely different thing in another scientific theory. Certainly, this stems from his insistence that scientific theory influences one’s beliefs and assumptions. Elaborating further on this, Feyerabend (1962) argues that “...scientific theories are ways of looking at the world; and their adoption affects our general beliefs and expectations, and thereby also our experiences and our conception of reality.” (p.29) Hence, transition from one scientific theory to another is often accompanied with changes in meaning of terms in the theories. With regard to Feyerabend’s idea of incommensurability which centers mainly on meaning variance, Collodel (2011) states: “It focused almost exclusively on the contextual theory of meaning that lies at the bottom of Feyerabend’s idea of incommensurability and highlighted the vagueness of its formulation ...” (p.2) It becomes obvious that for Feyerabend, the meanings of scientific concepts are quite contextual, and are not in any way fixed. Here, Feyerabend agrees with Heraclitean idea that change is constant. However, his concern in this

regard has to do with scientific theories. Analyzing further Feyerabend's idea, Preston (2020) states:

Feyerabend therefore idolised semantic instability, arguing that the semantic stability presupposed by positivist accounts of reduction, explanation and confirmation, has been and should be violated if we want progress in science. If meaning is determined by theory, terms in very different theories simply cannot share the same meaning: they will be "incommensurable". Any attempt to derive the principles of an old theory from those of a new one must either be unsuccessful or must effect a change in the meaning of the old theory's terms. The "theoretical reduction" beloved of Logical Empiricists is therefore actually more like *replacement* of one theory and its ontology by another. (para. 55)

This demonstrates that the meanings of terms or concepts are not constant in the course of scientific progress. From this perspective, it is clear that Feyerabend's incommensurability thesis is precisely in the domain of scientific progress, and it contradicts completely logical positivists' linear view of scientific progress. Such difference in meaning of concepts in different scientific theories gives room for their incommensurability.

At this point, one can argue that Feyerabend's incommensurability thesis agrees with that of Thomas Kuhn to a reasonable extent. This is as a result of Kuhnian argument that the meanings of concepts change after scientific revolution. In line with this, Feyerabend argues that the concepts of 'length' and 'mass' as used in both the classical celestial mechanics and special theory of relativity are quite different concepts, and are just relational concepts. Hence, what the concept 'length' means in the classical celestial mechanics is quite different from what it means in special theory of relativity. They do not mean the same thing in the two theories, and this entails that there is conceptual disparity in the two theories. Such conceptual disparity affects almost everything concerning the theories. Elaborating further on this, Feyerabend (1970) states:

This conceptual disparity, if taken seriously, infests even the most 'ordinary' situations: the relativistic concept of a certain shape, such as a table, or of a certain temporal sequence, such as my saying 'yes', will differ from the corresponding classical concept also. It is therefore vain to expect that sufficiently long derivations may eventually return us to the older ideas...A comparison of content and a judgement of verisimilitude cannot be made (p.222)

Obviously, the conceptual disparity in two different scientific theories make the comparism of their contents very difficult. This is at the core of Feyerabend's incommensurability theory.

Furthermore, Feyerabend argues that incommensurability is quite evident in the early period of human development. This demonstrates that it is not just restricted to the context of the relationship between two scientific theories. He draws example from Piaget's description of the developmental stages of child's perception. According to him:

The first example is instructive for other reasons also, for incommensurability plays an important role in the early months of human development. As has been suggested by Piaget and his school, the child's perception develops through various stages before it reaches its relatively stable adult form. In one stage objects seem to behave very much like after-images—and they are treated as such: the child follows the object with his eyes would require a minimal physical (or intellectual) effort, an effort moreover, that is already within the child's reach. There is not even a tendency to search—and this is quite appropriate, 'conceptually' speaking. For it would indeed be nonsensical to 'look for' an afterimage. Its 'concept' does not provide for such an operation. The arrival of the concept, and of the perceptual image, of material objects changes the situation quite dramatically. There occurs a drastic reorientation of behavioural patterns and, so one may conjecture, of thought. Afterimages or things somewhat like them still exist, but they are now difficult to find and must be discovered by special methods (the earlier visual world therefore *literally disappears*). Such methods proceed from a new conceptual scheme (afterimages occur in *humans*, not in the outer physical world, and are tied to them)... (Feyerabend, 1970, pp. 223-224)

The above quotation expresses the view that incommensurability is operative in the early period of human development. This is basically evident in the aspect of conceptual changes that take place in the course of child's development. It ought to be noted that such observational and conceptual changes in the course of human development entail incommensurability. Feyerabend brought in this analysis of incommensurability in the early stages of human development to demonstrate that such also exists outside the domain of scientific investigation.

Feyerabend's idea of incommensurability seems to imply that incommensurable theories are incomparable, and such is a serious threat to rational choice between different theories. Attesting to this, Farell (2003) maintains that "...Feyerabend's thesis of incommensurability is said to make rational choice between competing theories impossible." (p.71). Such impossibility in rational choice between competing theories is due to the issue of incomparability. Hence, he was accused of upholding incomparability of different universal scientific theories in his incommensurability thesis by some scholars. Contrary to this, Feyerabend argued that incommensurable theories are not incomparable. Oberheim and Hoyningen (2018) articulate Feyerabend's argument on this issue thus:

The extent of the misreading of incommensurability as implying incomparability is even more dramatic in Feyerabend's case. A far cry from claiming that incommensurable theories cannot be compared, Feyerabend explicitly and repeatedly argued that incommensurable alternatives actually offer a *better* means of comparing the merits of theories than the mere development of commensurable alternatives (Feyerabend 1962, 66; cf.

Oberheim 2006, 235ff.). He illustrated this point with an example of a *crucial experiment* between incommensurable theories. He argued that even though the central concepts of statistical and classical phenomenological thermodynamics are incommensurable, it was still possible indirectly to stage a crucial experiment between them (Perrin's confirmation of Einstein's quantitative predictions of Brownian motion). This was the centre piece of Feyerabend's argument for pluralism. (para.42)

Difficulty in comparism does not in any way imply incomparability.

FEYERABEND'S RESPONSE TO THE ARGUMENTS RAISED AGAINST INCOMMENSURABILITY THESIS

Incommensurability theory is very controversial in the domain of philosophy of science. This stems from the fact that it questions and challenges the traditional scientific assumption on the relationship between different or successive scientific theories advanced by logical positivists. Hence, many objections have been raised against it by philosophers of science. Feyerabend examined, and as well criticized the objections raised against incommensurability theory.

The first objection is from the perspective of the anthropological field work. It revolves around the argument of the logical positivists like Carnap, Feigl, Nagel etc that "the terms of a theory receive their interpretation, in an indirect fashion, by being related to a different conceptual system which is either an older theory, or an observation language" (Feyerabend, 1970, p.225). This argument raised by the logical positivists denies the tenet of incommensurability thesis by insisting that the terms of a given scientific theory can be interpreted with reference to those of older scientific theories. Such argument upholds the idea of the relationship of similarity between successive scientific theories, and maintains that there is a common language for translation of different scientific theories. Feyerabend was not comfortable with the argument, and thus he rejected it completely. He criticized the argument of the logical empiricists or positivists thus:

Linguistics remind us that a perfect translation is never possible, even if we use complex contextual definitions. This is one of the reasons for the importance of *field work* where new languages are learned from *scratch* and for the rejection, as inadequate, of any account that relies on (complete or partial) translation. *Yet just what is anathema in linguistics is now taken for granted by logical empiricists*, a mythical 'observation language' replacing the English of the translators.(Feyerabend, 1970, p.225)

Feyerabend argues that perfect translation of the terms of a given scientific theory into another scientific theory is not possible, citing example from the domain of Linguistics in which perfect translation between two different languages is impossible. He thus insists and upholds the possibility of incommensurability of two different scientific theories.

Another objection raised against incommensurability thesis revolves around the argument that incommensurability brings about confusion in scientific investigation. The objection goes thus:

It is also said that in admitting incommensurability into science we can no longer decide whether a new view explains what it is supposed to explain or whether it does not wander off into different fields. For example, we would not know whether a newly invented physical theory is still dealing with problems of space and time or whether its author has not by mistake made a biological assertion, (Feyerabend, 1970, p.227)

The above argument seems to suggest that incommensurability theory introduces a kind of disorder and discontinuity in scientific enterprise, which contradict the traditional assumptions in philosophy of science advanced by logical positivists. In response to such objection, Feyerabend (1970) argues thus: “For once the fact of incommensurability has been admitted, the question which underlies the objection does not arise” (p.227) and further argues that “Progress was made by the very same wandering off into different fields...” (Ibid., p.227) This implies that the acceptance of incommensurability thesis already cancels or nullifies the objection. Conceptual discontinuity from the previous scientific theory is not out of place in scientific investigation, and is one of the major tenets of incommensurability thesis.

Furthermore, another objection raised against incommensurability theory which was examined by Feyerabend “starts from the notion of *explanation*, or *reduction* and emphasizes that this notion presupposes continuity of concepts...” (Feyerabend, 1970, Ibid.,p.227) This objection is in agreement with logical positivists’ view that scientific concepts may have similar meanings in different scientific theories as well as their view that a new theory that emerges in the course of scientific development may be an extension of the old one. This view completely contradicts the major tenets of incommensurability theory. Hence, Feyerabend was entirely dissatisfied with it. Against this objection, Feyerabend (1970) argues that:

There is only one task we can legitimately demand of a theory and it is that it should give us a correct account of the *world*. What have the principles of explanation got to do with this demand? Besides, why should the notion of explanation be burdened by the demand for conceptual continuity? This notion has been found to be too narrow before (demand of derivability) and it had to be widened so as to include partial and statistical connections. Nothing prevents us from widening it still further to admit, say, ‘explanation by equivocation’ (p.227)

Hence, the notion of explanation has nothing to do with the issue of conceptual continuity. Feyerabend insists on conceptual discontinuity in the course of scientific development, which implies that scientific concepts may not retain their meanings as theories change.

Haven refuted the above argument against incommensurability theory, Feyerabend considered the next objection to incommensurability thesis which tried to reduce incommensurability theory to the judgment of taste with regard to the choice between different scientific theories, which of course leads to subjectivism or relativism. The objection goes thus:

Incommensurable theories, then, can be refuted by reference to their own respective kinds of experience...Their content *cannot* be compared. Nor is it possible to make a judgement of *verisimilitude* except within the confines of a particular theory...What remains are aesthetic judgements, judgements of taste and our own subjective wishes. Does this mean that we are ending up in subjectivism? Does this mean that science has become arbitrary, that it has become one element of the general relativism which Popper wants to attack? (Feyerabend, 1970, pp. 227-228)

The above objection reduces the choice between different scientific theories to fundamentally judgements of taste, and argues that incommensurability lands one to relativism as well as subjectivism. Feyerabend is not comfortable with the above argument because it questions the essence of his incommensurability theory. Responding to the above objection, Feyerabend (1970) states:

What better reminder is there than the realization that the choice between theories which are sufficiently general to provide us with a comprehensive world view and which are empirically disconnected may become a matter of taste? That the choice of our basic cosmology may become a matter of taste? Secondly, matters of taste are not completely beyond the reach of argument (p.228)

Feyerabend dismissed the arguments made against incommensurability thesis. It is obvious from the foregoing that Feyerabend upholds incommensurability theory, and did not accept any of the objections raised against incommensurability theory. However, incommensurability theory remains very controversial as it contradicts the basic assumptions in philosophy of science.

PAUL FEYERABEND AND THOMAS KUHN ON INCOMMENSURABILITY THEORY: AREAS OF CONVERGENCE AND DIVERGENCE

As was earlier stated in this article, Paul Feyerabend and Thomas Kuhn are the proponents of incommensurability theory in contemporary philosophy of science. It becomes necessary to examine the areas of convergence and divergence in their respective versions of incommensurability theory. Such necessity stems from the fact that their claims on incommensurability are not exactly the same, and each of them articulated related but different versions of incommensurability theory.

Certainly, there are areas of difference in their versions of incommensurability theory. Such areas of difference bring out very clearly the uniqueness of their respective versions of the theory. Oberheim and Hoyningen (2018) brought out the differences between Thomas Kuhn's and Paul Feyerabend's incommensurability theories thus:

Initially, Feyerabend had a more concrete characterization of the nature and origins of incommensurability than Kuhn. On Feyerabend's view, because the nature of objects depends on the most advanced theories about them, and because the meaning of observation statements depends on the nature of those objects, the interpretation of an observation language is determined by

the theories we use to explain what we observe. Kuhn, by contrast, was initially much less sure about the exact meaning of his notion of incommensurability, especially regarding world change, which he saw as the most fundamental aspect of incommensurability. Kuhn frankly confessed to have been at a loss: “In a sense that I am unable to explicate further, the proponents of competing paradigms practice their trades in different worlds” (1962, 150). He suggested that “we must learn to make sense of statements that at least resemble these” (1962, 121), and then spent a great deal of effort attempting to do so. (para. 38)

This demonstrates that Feyerabend’s incommensurability theory is more vivid than that of Kuhn. Feyerabend seems to be more firm in the articulation of his incommensurability theory. This is as a result of Kuhn’s initial expression of uncertainty in his attempt to explicate the actual meaning of his incommensurability theory. Feyerabend never expressed such uncertainty in his articulation of the theory. However, Feyerabend seems to be more restricted in his version of incommensurability theory than Thomas Kuhn. It ought to be noted that Feyerabend restricted his incommensurability theory mainly to fundamental theories. Attesting to this, Oberheim and Hoyningen (2018) note:

Feyerabend’s concept of incommensurability of scientific theories was much more restricted than Kuhn’s. For Kuhn, incommensurability had three *prima facie* heterogeneous domains, holistically bound: a change of problems and standards, a change of concepts used to state and solve them, and a change of world-view in which they arise. Feyerabend’s focus, on the other hand, was initially exclusively on concepts occurring in universal or fundamental theories, together with their ontological implications. Ironically, however, in developments after 1962, both authors move in opposite directions. Kuhn gradually eliminated everything from his notion of incommensurability that does not concern scientific concepts, and ended more or less where Feyerabend began... Feyerabend, by contrast, increasingly emphasized aspects of perceptual change (1975, 225–229, 273–274; 1978, 68; 1988, 172–176), and also changes to the set of legitimate problems a discipline should handle (1975, 274–275)...(para. 39)

It becomes clear from the above specification that Kuhn has a wider notion of incommensurability than Feyerabend. Kuhn seems to be more liberal in his incommensurability thesis. It is quite obvious that Kuhn’s list of incommensurable theories is very much wider than that of Feyerabend. This is due to the fact that Feyerabend limited incommensurability to fundamental or universal scientific theories.

Furthermore, Thomas Kuhn seems not to be very firm in his incommensurability theory. He modified it remarkably and severally as a result of criticisms from other scholars. Collodel (2011) observed that Feyerabend did not change and modify his basic incommensurability thesis as often as Thomas Kuhn did. According to him:

Feyerabend's idea of the incommensurability between universal scientific theories or cosmologies is usually considered as one of those central notions that remained quite stable throughout his philosophical work, especially if compared with Kuhn's germane but rather changing idea. In particular, it is generally accepted that Feyerabend's version of incommensurability did not show significant changes in his writings of the 1960s, while it is customary to notice that the idea was gradually extended in his later work of the early 1970s so as to include in its domain such diverse elements as stages in the development of human perception, frameworks of thought and actions as well as culturally specific worldviews. (Collodel, 2011, p.1)

However, this does not imply that Feyerabend did not in any way modify his incommensurability thesis.

Despite the differences between their versions of incommensurability theory, there are points of convergence or agreement. They agree on the issue of conceptual discontinuity between different scientific theories, and insist that scientific concepts change their meanings in the course of scientific development. Both of them agree that scientific concepts derive their meanings from their host theory. Also, both of them deny logical positivists' cumulative fashion of scientific development. Oberheim and Hoyningen (2018) articulate the central point of convergence in their versions of incommensurability thus:

Finally, there is one central, substantive point of agreement between Kuhn and Feyerabend. Both see incommensurability as precluding the possibility of interpreting scientific development as an approximation to truth (or as an "increase of verisimilitude")... They reject such characterizations of scientific progress because they recognize and emphasize that scientific revolutions result in changes in ontology. Such changes are not just refinements of, or additions to, the older ontology, such that these developments could be seen as cumulative additions to already established theoretical views. Rather, the new ontology *replaces* its predecessor. Consequently, neither Kuhn nor Feyerabend can correctly be characterized as scientific realists who believe that science makes progress toward the truth. (para.43)

Thus, both Kuhn and Feyerabend agree that later scientific theories could not be said to be nearer to the truth than the earlier ones. Successive scientific theories are different from each other.

EVALUATION

Scholarly attention has been given to Paul Feyerabend's incommensurability theory in this article. As it is obvious in the discourse, Paul Feyerabend and Thomas Kuhn are the proponents of incommensurability theory in contemporary philosophy of science, though each of them articulated different but related versions of the theory. Generally, incommensurability theory is

very controversial in philosophy of science. This stems from the fact that it contradicted the traditional assumptions in philosophy of science advanced by logical positivists.

Certainly, Paul Feyerabend's incommensurability theory has remarkable implications for scientific development. It questions and contradicts cumulative or linear fashion of scientific development. With Feyerabend's incommensurability theory and that of Thomas Kuhn, scientific development is demonstrated to be discontinuous, and does not approximate to the ideal truth as logical positivists claim.

Just like Thomas Kuhn, Feyerabend's incommensurability theory leads to relativism and questions objective comparism as well as choice between different scientific theories. These are the major criticisms of Feyerabend's incommensurability theory. Attesting to this, Preston (2020) states:

In Feyerabend's version of the incommensurability thesis, the semantic principles of construction underpinning a theory (in its *realist* interpretation) can be violated or "suspended" by another theory. As a result, theories cannot always be compared with respect to their content, as "rationalists" would like. It took Feyerabend a while to see it, for he did *not* officially subscribe to this view until the late 1960s, but this opens the door to relativism, the view that there is no objective way of choosing between theories or traditions. This is perhaps the most notorious and widely-reviled consequence of the contextual theory of meaning. (para. 57)

Certainly, relativism is an inescapable consequence of Feyerabend's incommensurability theory. Relativism is quite inseparable from incommensurability principles. Farell (2003) also attests that "...it has often been asserted that Feyerabend's theories are inherently radically relativistic, and that this radical relativism precludes any systematic account of rationality."(p.71). Obviously, relativism is opposed to objectivity, and as such it constitutes a serious threat to objectivity which is the fundamental feature of science.

However, it ought to be noted that despite the shortcomings of Feyerabend's incommensurability theory, he is a scholar to be reckoned with in contemporary philosophy of science. His ideas on incommensurability are quite interesting, and have brought about the development of knowledge in contemporary philosophy of science. He is a revolutionary thinker, and as such, he was very influential in revolutionizing philosophy of science in the contemporary era. With Feyerabend and Kuhn, it became fashionable to think that scientific progress is not cumulative as it was traditionally assumed in philosophy of science, and that the meanings of scientific concepts are determined by scientific theories.

CONCLUSION

Paul Feyerabend's incommensurability theory distinguished him as a remarkable scholar in contemporary philosophy of science. His ideas on incommensurability thesis are very scholarly and enriching. However, there are problems associated with his incommensurability theory as demonstrated in this article. Despite the shortcomings associated with Feyerabend's incommensurability theory, he contributed immensely towards the growth of knowledge in

contemporary philosophy of science. He is very outstanding in the scholarship of philosophy of science. This is as a result of his innovations as well as his revolutionary ideas in the discipline.

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