Chapter 3: Feyerabend’s Incommensurability Thesis

In this chapter, I expound Feyerabend’s incommensurability thesis from the perspective of his scientific realism and methodology. These perspectives of investigation are chosen because they are the cornerstones of his philosophical system as a whole. It is without exception that his incommensurability thesis is built upon these bases. Feyerabend has once summarized his thought in the following concise chain, generally, which revealing the significance of critical rationalism, methodological pluralism and scientific realism in his philosophy:\footnote{Feyerabend 1995: ix}

\[
\text{criticism } \rightarrow \text{ proliferation } \rightarrow \text{ realism}
\]

(Feyerabend 1995: ix)

3.1 The roots of incommensurability in Feyerabend’s scientific realism

Before we can proceed to Feyerabend’s incommensurability thesis, I shall elucidate two issues, viz., (1) is Feyerabend a realist? (2) What type of realism Feyerabend subscribes to, if he is a realist? They are elaborated in section 3.1.1.

These issues are not unimportant for Feyerabend’s incommensurability thesis. It is putatively recognized that incommensurability thesis poses problem to scientific realism, for the consequence of incommensurable theories is the impossibility of theory comparison. It is because (1) theories are neither agree nor disagree, for there is an “absence of logical conflict between incommensurable theories due to their formulation in different, untranslatable languages.” (Sankey 1999a: 3); (2) crucial experiment is impossible, for observation is no longer serving as an objective measurement since it is theory-laden (Preston 1997: 44). The consequence of (1) and (2) is the impossibility of theory-choice. Eventually, scientific progress is a myth.

The problem of rivalry, content comparison, and progress are the most important issues raised by the incommensurability thesis. They represent a challenge to the rationalist seeking to understand theory-choice as informed by a critical appraisal
of genuinely alternative theories. They are a challenge to the realist inclined to view theory-change as resulting in an increase of truth about the world. (Sankey 1999a: 4)

Hence, it is obvious that, at a cursory glance, Feyerabend’s incommensurability thesis is contradicting with the tenets of scientific realism. The detailed examination is provided below.

3.1.1 Feyerabend’s scientific realism

Feyerabend always regards himself a scientific realist.

I for one am not aware of having produced a single idea that is not already contained in the realistic tradition. (Feyerabend 1995: 104)

It is vital to be noted that Feyerabend’s self recognition is also agreed by his commentators and advocates, such as Preston (Preston 1997: 61) and Sankey (Sankey 2001: 11). However, scientific realism can take many forms. It is grounded in the common sense (Sankey 2001: 1; Boyd: 2002). In general, it asserts that there exists a world independent of us.

Scientific realism is the view that the aim of science is knowledge of the truth about observable and unobservable aspects of a mind-independent, objective reality. (Sankey 2001: 1)

The criteria of theory-choice in a realist’s account do not merely consider objective truth in the first place. Conversely, it is the “good faith” that plays the major role in theory-choice, according to some philosophers.

Scientific realism is the position that scientific theory construction aims to give us a literally true story of what the world is like, and that acceptance of a scientific theory involves the belief that it is true. (Fraassen 1980: 9)
Realism is encapsulated in the claim that "to have good reason for holding a theory is ipso facto to have good reason for holding that the entities postulated by the theory exist". (Gutting 1985: 118)

Now I turn to Feyerabend's realist account. According to him,

a realist ... wants to give a unified account, both of observable and of unobservable matters, and he will use the most abstract terms of whatever theory he is contemplating for that purpose. He will use such terms in order to either give meaning to observation sentences, or else to replace their customary interpretation... (Feyerabend 1995a: 155)

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. (Feyerabend 1970a: 159, cited in Preston 1997: 87)

Positivists do not interpret theory realistically, according to Feyerabend. The "realistic interpretation" here is amount to interpreting both theoretical and observational terms in the theoretical context. On the contrary, the positivists assert that the interpretation of theory is observation-dependence. They hold that:

theoretical terms receive their interpretation by being connected either with a pre-existing observation language, or with another theory that has already been connected with such an observation language and that they are devoid of content without such a connection. (Feyerabend 1995a: 155)

Preston draws three ingredients of Feyerabend's scientific realism. First, Feyerabend subscribes to conjectural realism. It is because Feyerabend asserts that our theory goes beyond experiences (Preston 1997:61). He holds that:

our theories are attempted descriptions of the world, or of reality, descriptions which can be evaluated as true or false. (Preston 1997: 61)

According to Preston, this assertion "represents a commitment to the existential character of scientific theories." (Preston 1997: 61). This existential character is a requirement to
be labeled as scientific realist, according to Sankey's understanding of scientific realism (Sankey 2001: 2-3) and Putnam's metaphysical realism (Sankey Forthcoming: 1).

Second, Preston holds that "Feyerabend's realism has a semantic ingredient." (Preston 1997: 61). It is because Feyerabend asserts that theoretical statement has "direct factual reference" or "descriptive meaning" (Preston 1997: 61-62).

Although Feyerabend recognizes that theories can be given differing interpretations, he argues for what he calls 'realistic' interpretations, interpretations in which the theory is understood on its own terms. (Preston 1997: 62)

Lastly, there is an epistemological ingredient in Feyerabend's scientific realism (Preston 1997: 62). Feyerabend asserts that it is the observation statements that need interpretation and not theories (Preston 1997: 62)

[T]he meaning of observation sentences is determined by the theories with which they are connected. Theories are meaningful independent of observations; observational statements are not meaningful unless they have been connected with theories. (Feyerabend 1965a: 213, cited in Preston 1997: 62)

Preston thus concludes by holding that Feyerabend's version of scientific realism "is essential to establishing the existence of incommensurability" (Preston 1997: 108). Furthermore, "Feyerabend never relinquished the belief that the relationship of incommensurability between theories only exists if one has already taken the decision to interpret them 'realistically'" (Preston 1997: 108). Feyerabend's scientific realism is diverged from the popular realist claim. It can only be understood as aim-oriented, not achievement-oriented, for he asserts that theories are attempted descriptions of the world. Thus, to interpret theories "realistically" implies that one has to try his or her very best in the construction of the view of reality. In this realistic endeavor, one must reject empiricism in order to arrive at an objective result. Incommensurable theories will follow, for the rejection of empiricism weed out common meaning of observation statements.
So the incommensurability thesis arose historically as a rejection of the empiricist idea of an observation language shared by and capable of arbitrating between theories. This suggests another way to characterize the incommensurability thesis, viz. as the denial of the existence of a theory-neutral language in which the content of theories may be compared. (Sankey 1999a: 2)

As a realist, Feyerabend does not expect his incommensurability thesis poses problems to scientific realism, initially⁴. Now we look at how Feyerabend harmonizes his realism and incommensurability thesis.

‘Realism’ as defined in the incommensurability chapter does not mean that the real is identified with the theoretical object, it means that one tries to understand the real in theoretical terms rather than regarding it as ‘given’. Such, at least, is my view on the relation between the real object, the theoretical object, and the experienced object. (Feyerabend 1978, p171)

In a nutshell, Feyerabend’s incommensurability thesis is drawn upon his scientific realism. However, according to the popular view, Feyerabend is in a dilemma when the consequences of his thesis are anti-realism, that is, the impossibility of scientific progress and theory comparison. Nevertheless, he does not see himself in that situation. It is because he asserts that incommensurable theories are comparable. This is the main difference that distinguishes him from other proponents of incommensurability thesis.

... I tried to specify the conditions under which two theories ‘in the same domain’ would be deductively disjoint. I also tried to find methods of comparison that survive despite the absence of deductive relations. (Feyerabend 1978: 67-68)

In addition, Perovich has defended Feyerabend’s account by saving both his incommensurability and scientific realism:

What incommensurability shows is not the need for the rejection of the idea of reference to a reality independent of theory...(Perovich 1991, 324)

Neither of the accounts of incommensurability discoverable in Feyerabend can, I think, force us to reject realism and abandon the claim that terms in incommensurable theories may yet have a common reference. This however, is
hardly a disastrous result for Feyerabend, since he holds that our only access to the world is via our theoretical posits: "The world is not directly given to us, we have to catch it through the medium of traditions". This necessary intermediary of "phenomena" gives ample room for any characteristics considered symptomatic of incommensurability... to unfold. (Perovich 1991, 324)

3.1.2 A preliminary study of Feyerabend's incommensurability thesis

There are two versions of Feyerabend's incommensurability thesis throughout his philosophical career. The first version is named as "Thesis I", which was appeared in his An attempt at a realistic interpretation of experience, 1958. The second version is named as "incommensurability thesis", that appeared in 1962. There are three differences between them: (1) The former is unconscious development of incommensurability thesis against positivists' stability thesis, in favor of the scientific realism; whereas the latter is a more systematic and conscious elaboration towards the same intention. (2) The first version is more consistent; whereas it is converse for the second version. (3) The first version of incommensurability thesis focuses on observation statements; whereas the second version put emphasis on theoretical statements. Nevertheless, these two versions of incommensurability thesis share a common characteristic, that is, they are the consequence of Feyerabend's scientific realism and methodology.

It is worth noting that the artificial division of two versions of incommensurability thesis is of a chronological reason, for Feyerabend replaces the first version by the second version from 1962 onwards. The center of attack was shifted from stability thesis, in the first version, to meaning invariance, in the second version. However, the main motive of Feyerabend in developing incommensurability thesis, regardless the earlier or later version, is in favor of scientific progress. We shall see that his incommensurability thesis presupposes proliferation of theories that encourages scientific progress. It is this reason he holds fast to this thesis though he sees his arguments are not without difficulties.
3.1.3 Feyerabend’s critique of the positivists’ Stability Thesis and the generation of Thesis I

Thesis I is proposed by Feyerabend to refute the positivists’ empiricism, that is, the neutral theory of observation. According to Feyerabend, observation statement is not theory independent. Conversely, it is theory-laden. He even goes further to claim that there is no empirical element in an observation statement.

... observations (observation terms) are not merely theory-laden (the position of Hanson, Hesse and others) but fully theoretical (observation statements have no ‘observational core’) (Feyerabend 1995: x)

Hence, Feyerabend does not admit that observation statement is formulated from sense data in the theoretical context. He eliminates this sense of observation statements by saying that “there are only theoretical terms”. (Feyerabend 1995: x, fn3) This marks the difference between Feyerabend’s philosophy and that of other post-positivists, for he holds an extreme view of theory-ladenness of observation by discarding the “observational core” of an observation statement. What Feyerabend has asserted is that it is impossible to obtain meaning from the observational object that one perceives. Nevertheless, he does not denied there is a reality exist out there independent from the observer. In short, picture theory is untenable.

However, he claims that the legitimacy of observation statement is of pragmatic reason.

The distinction between observational terms and theoretical terms is a pragmatic (psychological) distinction which has nothing to do with the logical status of the two kinds of term. (Feyerabend 1995: 32)

There is of course a distinction between theoretical terms and observation terms, but it is a psychological distinction, dealing with the psychological processes that accompany their use, but having nothing to do with their content... (Feyerabend 1995: x, fn3)
Feyerabend asserts that sense data does not contribute to the knowledge increment. For they have no epistemological importance. He claims that observational statements are amount to theoretical statements, for the former is not the formulation of sense data.

The only difference between a blind person and a seeing person consists in the fact that the first one uses a different part of the theory (or of the consequences of the theory) as his observation language. Hence, even a blind person may understand 'red' and similar terms (of his theoretical language) and there is no reason why he should not be able to explain 'red' to a seeing person 'by ostension'. This being so we cannot assume that when ceasing to be blind he automatically improves his knowledge of redness. (Feyerabend 1995: 33)

However, positivists hold totally incompatible view with Feyerabend. Feyerabend enumerates two types of them, namely pragmatist and phenomenologist, holding a theory of meaning of observation statements called "the stability thesis". They claim that "scientific theories and other general assumptions are nothing but convenient means for the systematization of the data of our experience." (Feyerabend 1995: 20). This is a typical instrumentalist view.

Feyerabend has provided a clear picture of positivists' stability thesis, which he regards it as an empiricists' argument.

There are some empiricists who would admit that the meaning of theoretical terms may be changed in the course of scientific progress. However, not many people are prepared to extend meaning variance to observational terms also. The idea motivating this attitude is, roughly, that the meaning of observational terms is uniquely determined by the procedures of observation such as looking, listening, and the like. These procedures remain unaffected by theoretical advance. Hence, observational meanings, too, remain unaffected by theoretical advance. (Feyerabend 1980: 174)

It is to refute the stability thesis Feyerabend generates his thesis I, the first version of incommensurability thesis. However, it is worth noting that Feyerabend has not rejected positivists' and empiricists' theory of meaning as a whole. Feyerabend just disagrees with what Hempel calls "empiricist criterion of cognitive meaning", which is "capable, at
least in principle, of experiential test” (Hempel 1965: 215). Let’s trace the birth of thesis I from Feyerabend’s critique of positivism, that is, pragmatic and phenomenological approach to the meaning of observation statements.

The pragmatic approach treats the interpretation of an expression of observation statements as determined by its use (Feyerabend 1995: 21). Feyerabend calls it as “the principle of pragmatic meaning” (Feyerabend 1995: 21). Feyerabend takes Bohr’s idea of complementarity as an example of an application of the principle of pragmatic meaning. According to him, Bohr’s inclination to interpret quantum mechanics in the context of classical physics is a defeatist attitude12, for Bohr does not allow new concepts be created arbitrary to replace the old one (Feyerabend 1995: 23-24). Hence, Bohr appears as a conventionalist to Feyerabend.

According to Bohr the laws of matrix mechanics (or of wave mechanics) and, indeed, the laws of any future quantum theory are symbolic ‘expedients which enable us to express in a consistent manner essential aspects of the phenomena’..., i.e. of classical situations; he emphasizes that they do not form a ‘new conceptual scheme’... for the description of universal features of the world different from those of classical physics. And according to Bohr it would even be a ‘misconception to believe that the difficulties of the atomic theory may be evaded by eventually replacing the concepts of classical physics by new conceptual forms’..., as there exist ‘general limits of man’s capacity to create concepts. (Feyerabend 1995: 23-24)

Bohr’s idea is based upon the psychological reason, according to Feyerabend (Feyerabend 1995: 23). He perceives the creation of new conceptual scheme for quantum physics as an intuitive process that is impossible. Feyerabend retorts by providing a pragmatic/psychological reason too, without any further elaboration, asserting that Bohr’s predicament of creating new terms can be overcome if one would like to do so.

... we do find it difficult (though by no means impossible) to form an intuitive picture of processes which are not dependent upon the classical framework. But from this psychological predicament we can by no means infer ... that such intuitive understanding will never be possible. And it would be even less correct to assume on that basis that the concept of a non-classical process cannot be
formed...; for it is well known that we can form and handle concepts even of those things which we cannot readily visualize. (Feyerabend 1995: 23)

According to Feyerabend’s summarized remarks, Bohr’s defeatist attitude is “due to his implicit belief in the principle of pragmatic meaning and his explicit adoption of the inductivistic doctrine” (Feyerabend 1995: 24). Feyerabend asserts that alternative interpretations in science need not lead to logical absurdity (Feyerabend 1995: 24) and thus he rejects all future scientific terms must be used in the context of older terms. If the creation of new terms is encouraged, the meaning of a new term may be varying from the old term even though they share a common reference. Therefore, the stability thesis upheld by positivists is untenable.

Now let’s turn to the principle of phenomenological meaning.

Feyerabend asserts that the principle of phenomenological meaning is an empiricist account. It holds that the meaning of an observation term is determined by what is observed, that is, experience.

...in order to explain to a person what ‘red’ means one need only create circumstances in which red is experienced. The things experienced (or ‘immediately perceived’) in those circumstances completely determine the meaning of the word ‘red’...the meaning of an observational term is determined by what is ‘immediately given’ at the moment of the acceptance of any observational sentence containing that term. (Feyerabend 1995: 25)

It is clear that the main concept of the principle of phenomenological meaning is “the given”. This term is closely related with the term “sense data” in the traditional way (Austin 1961: 17). Austin elaborates this term as such:

... this suggests (a) that something is here ‘given’ us by somebody; (b) that sensa are called ‘given’ in contrast with something which is rather ‘made’ or ‘taken’, namely, my thoughts... (c) that some proposition is ‘given’ to us in sensation as incorrigible, as premisses are ‘given’ in sciences or ‘data’ to the detective: but sensa are dumb, and nothing is more surely fatal than to confuse sensing with thinking. (Austin 1961: 17)
The doctrine of "the given" is vital in epistemology, for most of the traditional philosophers regard it as the foundation of knowledge. Chisholm formulates "the given" in two theses by means of a traditional metaphor:

(A) The knowledge that a person has at any time is a structure or edifice, many parts and stages of which help to support each other, but which as a whole is supported by its own foundation.

(B) The foundation of one's knowledge consists (at least in part) of the apprehension of what have been called, variously, "sensations," "sense-impressions," "appearances," "sensa," "sense-qualia," and "phenomena."

(Chisholm 2003: 169)

Based upon these theses, Chisholm formulates the so-called "phenomenalistic version" of "the given", which is amount to the principle of phenomenological meaning which Feyerabend attacks at.

(C) The only apprehension that is thus basic to the structure of knowledge is our apprehension of "appearances" (etc.) – our apprehension of the given.

(Chisholm 2003: 169)

When we formulate Chisholm's point (C) in observation statement, we are going to arrive at Austin's point (c). As stated by Austin, empiricists hold that those observation statements will be incorrigible, for the observation terms having their root in sense data that perceived. Now it raises a question: What justification do I have for thinking I know that an observation statement is true? This is a crucial question as it probes into the legitimacy of the foundation of empirical knowledge. Feyerabend asserts that the justification provided by the phenomenologists is untenable, for a psychological reason. According to him, introspection is required when one tries to interpret an observation statement. He contends that one can immediately perceive "the given object", but not for the interpretation of an observation statement (Feyerabend 1995: 25). It is because an observation statement, in phenomenologists' account, is formed on the assumption that its meaning is determined by its corresponding phenomenon or given object
(Feyerabend 1995: 25). When one attends to the observation statement, he or she has discovered the phenomenon $P1$ that the observation statement fits the given phenomenon in reality. To attend to phenomenon $P1$ which manifests such phenomenological adequacy, he or she has to discover the fitness between phenomenon $P1$ with another phenomenon $P2$ (Feyerabend 1995: 25-26). It will lead to infinite regress, according to Feyerabend.

Indeed, assume that the observer $O$ utters $S$... because... he has discovered that $S$ is phenomenologically adequate or that it 'fits' $P$. This would mean that $O$ (1) not only attends to $P$ and $S$, but also to a third phenomenon $P'$ (the relation between $P$ and $S$); and (2) that he has identified $P'$ as the relation of phenomenological adequacy. According to the idea we are investigating at the moment he could have done the latter only by confronting $P'$ with a further phenomenon $S'$... to the effect that $P'$ was the relation of phenomenological adequacy, and by discovering that $S'$ fits $P'$. This discovery in its turn pre-supposes (1') that he not merely attends to $P$, $S$, $P'$, $S'$, but also to a further phenomenon $P''$ (the relation between $P'$ and $S'$); and (2') that he has identified $P''$ as the relation of phenomenological adequacy; and so on ad infinitum. (Feyerabend 1995: 25-26)

Thus, Feyerabend’s objection to the principle of phenomenological meaning is due to the psychological impossibility. One cannot interpret an observation statement because the introspected phenomena do not provide "a stopping place in the process, or dialectic, of justification." (Chisholm 2003: 170). It is worth noting that Feyerabend does not deny the existence of the reality, or the realness of the sense data. He just opposes the view that the reality confers meaning on our observation statements. Feyerabend does not seek a foundation of knowledge in phenomenon, though he believes that scientific observation is a rational enterprise. However, he suggests that experience shall be interpreted realistically (Feyerabend 1995: 17-36), that is, in the context of scientific theory. It is naturally to infer that his view is similar with that of Sellars’s:

For empirical knowledge, like its sophisticated extension, science, is rational, not because it has a foundation but because it is a self-correcting enterprise which can put any claim in jeopardy, though not all at once  

(Sellars 2003: 124)
After showing that both principle of pragmatic meaning and phenomenological meaning fail to account for the meaning of observation statement, Feyerabend has proved that the claim of stability thesis is untenable. To weed the impact of stability thesis out, Feyerabend thus proposes his Thesis I\(^7\), which he defined as:

The interpretation of an observation language is determined by the theories which we use to explain what we observe, and it changes as soon as those theories change. (Feyerabend 1995: 31)

A theory will be deemed meaningful if its interpretation is going beyond the empirical content.

... the interpretation of any physical theory contains metaphysical elements, the term ‘metaphysical’ here being used as synonymous with ‘non-empirical’. (Feyerabend 1995: 42)

To consolidate Thesis I by dispelling the empirical element in the interpretation of theory, Feyerabend proposed principle of semantic independence in his *On the interpretation of scientific theories*, 1960, two years after his proposal of Thesis I. This proposal springs from the objections against positivism as well. However, the novelty of principle of semantic independence is its semantic insight on the theory interpretation. Hence, his objection against positivism in 1960 is not merely a redundant view with that of his thought in 1958.

Feyerabend’s first objection against positivism is that positivism “implies that statements describing causally independent situations may yet be semantically dependent” (Feyerabend 1995: 37). This positivistic assumption is based upon stability thesis, that is, the observational terms are semantically stable in the interpretation of a theory. Feyerabend provides a form of interpretation of experienced object, which he calls statement (1), as such (Feyerabend 1995: 37):
F (M, S, O)

Where F is a complicated logical constant, M is a corresponding situation of perceived object, O is an observable situation, and S is a mediating situation which is identical with the conditions of observation (Feyerabend 1995: 37). Feyerabend asserts that not all the descriptive terms of M\(^1\) are connected with observational terms, in a several given causally independent situations (Feyerabend 1995: 38). His view is consistent with his objection to stability thesis. Hence, the adherents of positivistic approach assume that the terms of M must dependent upon all the terms of S, in which means that all the interpretations of causally independent situations dependent on the mediating terms of S\(^2\) (Feyerabend 1995: 38) which is stable. This positivistic approach aims at providing an ultimate empirical foundation of theory interpretation. It is false, according to Feyerabend, for the situation M does not necessary causally dependent on the situation S (Feyerabend 1995: 38). Therefore, semantic dependency does not necessary exist.

Feyerabend implicitly asserts that descriptive terms do not dependent semantically on the empirical basis. However, they are semantically dependent on theoretical basis. His view is manifested in the following example:

… consider the attempt to explain the theoretical terms of celestial mechanics on the basis of observational terms referring to bright dots as seen either through a telescope, or on a photographic plate. In this case the mediating situation consists in the optical properties of the planets, the properties of the light which is reflected by them, the properties of the atmosphere of the earth, the properties of telescopes, and so on. Again, the interpretation of sentences containing the terms to be explicated will depend upon the interpretation of other sentences referring to states of affairs which are in no causal relation whatever to the states of affairs referred to by the former. For example, the interpretation (the ‘meaning’) of ‘mass of the sun’ will partly depend upon the interpretation of ‘refractive index of the atmosphere of the earth’. (Feyerabend 1995: 38)

This is obviously a holistic approach to the theory of meaning. However, Feyerabend’s holism of interpretation is different from that of Quine. First, Holism is customarily defined as “a variety of positions which have in common a resistance to understanding
larger unities as merely the sum of their part, and an insistence that we cannot explain or understand the parts without treating them as belonging to such larger wholes” (Hookway 2001: 162). Feyerabend does not appear to produce some writings upholding the first part of the definition. However, his contextual theory of meaning indicates that his thought is congruent with the latter part of the definition of holism. Second, “holism suggests that the empirical basis for our science could in fact constitute the basis for many different theoretical superstructures.” (Bergström 2001: 388). It is apparent that Feyerabend never subscribes to this idea, for he suggests that theory contains no “observational core” (Feyerabend 1995: x). Third, base on the second point, perhaps Feyerabend’s elimination of empirical significance in a theory contributes to the difference between his incommensurability thesis and Quine’s underdetermination thesis. For underdetermination thesis says that two logically incompatible theories may contain the same empirical content (Bergström 2001: 388); whereas Feyerabend’s incommensurability thesis appears to deny20.

Now I turn to Feyerabend’s second objection against positivism.

My second objection is closely related to the first. It may be stated by saying that given two situations, S’ and S”, which are causally independent of each other, a change of our theories about S’ which preserves this causal independence may yet imply a change of the interpretation of S”. (Feyerabend 1995: 39)

Such positivistic allegation is untenable. For if the meaning of the theoretical terms is dependent upon the observational terms, the change of the latter will incur a change of the former (Feyerabend 1995: 39-40).

According to Feyerabend, both objections are based upon the principle of semantic independence (Feyerabend 1995: 40):

The interpretation of a statement describing a situation, which is causally independent of the situation described by another statement should be independent of the interpretation of this latter statement. (Feyerabend 1995: 40)
Feyerabend holds that the immediate consequence of the principle of semantic independence is that "the interpretation of a scientific theory depends upon nothing but the state of affairs it describes" (Feyerabend 1995: 42). However, it is worth noting that "state of affairs" here is to be interpreted in the theoretical context, for Feyerabend has dismissed the "observational core" of observation statement. Feyerabend asserts that the result of his principle of semantic independence "has a natural place within realism" (Feyerabend 1995: 42).

Realism asserts that there exist states of affairs which are causally independent of the states of observers, measuring instruments and the like, but which may influence these instruments and these observers. It also admits that whatever influence a real state of affairs exerts upon an observer, it will not be the only influence, but will have to interact with many other influences... According to the realistic interpretation, a scientific theory aims at a description of states of affairs, or properties of physical systems, which transcends experience not only insofar as it is general (whereas any description of experience can only be singular), but also insofar as it disregards all the independent causes which, apart from the situations described by the theory, may influence the observer or his measuring instrument. (Feyerabend 1995: 42)

I think Feyerabend’s principle of semantic independence is a transitional concept from his Thesis I to Incommensurability Thesis\textsuperscript{21}, for two reasons. First, from the perspective of chronology, principle of semantic independence was proposed in the midst of the proposal of Thesis I, in 1958, and of Incommensurability Thesis, in 1962. Second, from the perspective of Feyerabend’s reasoning, the semantic consideration of theory interpretation that was first initiated in the principle of semantic independence is elaborated at length in his Incommensurability thesis.

3.1.4 Feyerabend’s proposal of Incommensurability Thesis

"The most controversial consequence of the contextual theory is the incommensurability-thesis" (Preston 1997: 102). In his Thesis I and principle of semantic independence,
Feyerabend contends that it is observation statement that needs interpretation, not theoretical statements. All observation statements must be interpreted in theoretical context. However, "the basic ontology and conceptual apparatus of theories may differ" (Sankey 1999a: 7). "The terms defined within one theory may be indefinable in the context of other", for "theories cannot share any common statements" (Sankey 1999a: 7).

What happens here when a transition is made from a theory $T'$ to a wider theory $T$ (which, we shall assume, is capable of covering all the phenomena that have been covered by $T'$) is something much more radical than incorporation of the unchanged theory $T'$ (unchanged, that is, with respect to the meanings of its main descriptive terms as well as to the meanings of the terms of its observation language) into the context of $T$. What does happen is, rather, a replacement of the ontology (and perhaps even of the formalism) of $T'$ by the ontology (and the formalism) of $T$, and a corresponding change of the meanings of the descriptive elements of the formalism of $T'$... This replacement affects not only the theoretical terms of $T'$ but also at least some of the observational terms which occurred in its test statements\textsuperscript{22}. (Feyerabend 1995: 44-45)

Base upon his attack on the positivists' stability thesis, Feyerabend conceives of his Incommensurability Thesis by attacking the principle of deducibility and the principle of meaning invariance (Feyerabend 1995: 46). He has found these "orthodox approaches" in Nagel's theory of reduction. It is worth noting that Feyerabend's attack on the principle of meaning invariance makes incommensurability widely understood as a semantic issue\textsuperscript{23} (Oberheim and Hoyningen-Huene 1997: 448).

In contemporary literature, incommensurability has been developed into the incommensurability thesis which concerns semantic issues that focus on meaning variance, reference invariance, and the possibility of inter-translatability of the vocabulary of successive scientific theories. (Oberheim and Hoyningen-Huene 1997: 447)
3.1.4.1 Feyerabend’s critique of the principle of deducibility

Reductionism is a form of scientific explanation which holds that “all scientific truth should ultimately be explicable, in principle at least, by appeal to fundamental laws governing the behavior of microphysical particles.” (Dupré 2001: 402). Feyerabend’s attack of the reductionism is that defined by Nagel and Oppenheim, which higher level theories can be reduced to lower level, or put it another way, higher level theories can be deduced from lower level theories.

The objective of the reduction is to show that the laws, or the general principles of the secondary science, are simply logical consequences of the assumptions of the primary science. (Nagel 1961: 354, cited in Feyerabend 1995: 48)

The explanandum must be a logical consequence of the explanans; in other words, the explanandum must be logically deductible from the information contained in the explanans, for otherwise the explanans would not constitute adequate grounds for the explanation. (Hempel and Oppenheim 1948: 321, cited in Feyerabend 1995: 48)

Feyerabend holds that principle of deducibility is untenable, for it is “in disagreement both with actual scientific practice and with reasonable methodological demands” (Feyerabend 1995: 57). I explicate the former in this chapter while the latter in chapter four.

Feyerabend provides a historical account in his argument. He claims that the reduction of Galilean physics ($T'$) to Newtonian physics ($T$), as asserted by Nagel, is problematic. There is an inconsistency between them. For if there is any finite value of $H/R^{24}$, $T'$ will not follow logically from $T$. (Feyerabend 1995: 58).

It is therefore impossible, for quantitative reasons, to establish a deductive relationship between $T$ and $T'$, or even to make $T$ and $T'$ compatible (Feyerabend 1995: 58)

Thus the two theories, while the predictions they generate may be observationally indistinguishable, are not even, strictly speaking, consistent with one another:
they transgress the consistency condition, as well as the derivability condition. (Preston 1997: 84)

Feyerabend’s basic argument is based upon “the fact that one and the same set of observational data is compatible with very different and mutually inconsistent theories” (Feyerabend 1995: 59). It is because theoretical statements confer meaning on observation statements, and vice versa is not true. This quotation sounds alike underdetermination of theory. Feyerabend explains:

This is possible for two reasons: first, because theories, which are universal, always go beyond any set of observations that might be available at any particular time; second, because the truth of an observation statement can always be asserted within a certain margin of error only. The first reason allows for theories to differ in domains where experimental results are not yet available. The second reason allows for such differences even in those domains where observations have been made, provided the differences are restricted to the margin of error connected with the observations. Both reasons taken together give us considerable freedom in the construction of our theories. (Feyerabend 1995: 59)

The freedom of theory construction, as asserted by Feyerabend, not only will lead to his methodological pluralism. Indeed, it explains and legitimate the unavoidable break down of deductive relationship between two successive theories. Feyerabend and his supporters thus conclude that:

[e]ven the favoured instances of apparently orderly accretions have turned out to be surprisingly disordered on close inspection. Indeed, there is not one example from the history of science that exactly fits the logical empiricist pattern of reduction, and some outstanding cases do not fit at all... (P.S. Churchland 1986: 281, cited in Preston 1997: 84)

Feyerabend’s objection of principle of deducibility has a connection with his previous critique of positivists’ stability thesis and principle of semantic dependence. Such connection is established via his view of meaning. It is in his critique of principle of meaning invariance that leads him to the further elaboration of incommensurability.
3.1.4.2 Feyerabend’s critique of the principle of meaning invariance

Following the lines of critique he makes on Nagel's reductionism, Feyerabend concludes that Nagel’s reduction leaves the meanings of the main descriptive terms of the reduced discipline untouched (Feyerabend 1995: 81). It is because in order for the reduction to be taken place, reductionists hold that the terms in both reduced and reducing theories must be stable. On the contrary, Feyerabend deems the change of meanings “a natural occurrence” (Feyerabend 1995: 81). For he asserts that “two theories ‘in the same domain’ would be deductively disjoint” (Feyerabend 1978: 67)

Feyerabend’s denial of the reductionist thesis that later theories typically subsume earlier theories is encapsulated in his claim that certain pairs of theories are in fact incommensurable. As a first approximation, this amounts to the claim that the logical relations required for deductive subsumption fail to obtain. (Sankey 1999a: 10)

Feyerabend suggests that the ontological replacement of theories refutes reductionists’ principle of meaning invariance.

Our argument against meaning invariance is simple and clear. It proceeds from the fact that usually some of the principles involved in the determination of the meanings of older theories or points of view are inconsistent with the new, and better, theories. It points out that it is natural to resolve this contradiction by eliminating the troublesome and unsatisfactory older principles and to replace them by principles, or theorems, of the new theory. And it concludes by showing that such a procedure will also lead to the elimination of the old meanings and thereby to the violation of meaning invariance. (Feyerabend 1995: 82-83)

Freedom of theory construction refutes the principle of meaning invariance, according to Feyerabend25. However, Feyerabend sooner holds that those who construct theory freely cannot be deemed as instrumentalists. For he claims that instrumentalism is untenable due to its conventional characteristic.
Instrumentalism maintains that the new theory must not be interpreted as a series of statements, but that it is rather to be understood as a predictive machine whose elements are tools rather than statements and therefore cannot be incompatible with any principle already in existence... it has never been explained why a new and satisfactory theory should be interpreted as an instrument... the only advantage ... is that they are familiar –an advantage which is a psychological and historical accident and which should therefore not have any influence upon questions of interpretation and of reality. (Feyerabend 1995: 83)

... neither a restricted nor a universal instrumentalism can be carried through in a satisfactory manner. (Feyerabend 1995: 83)

However, some of the commentators, such as Preston, have falsely claimed that Feyerabend is a local instrumentalist, though admitted that he has not subscribed to universal instrumentalism. Preston claims that Feyerabend agrees with certain alleged instrumentalists, such as Bellarmino (Preston 1997: 65). His allegation is based upon the following statement written by Feyerabend:

‘The view of physical science founded by Cardinal Bellarmino and Bishop Berkeley has won the battle without a further shot being fired’ writes Popper. This is simply not true. First of all there is a tremendous difference between the instrumentalism of Bellarmino and the instrumentalism of Berkeley. The instrumentalism of Bellarmino could have been supported by physical arguments drawn from contemporary physical theory. The instrumentalism of Berkeley could not have been so supported and was of a purely philosophical nature. (Feyerabend 1962b: 261, cited in Preston 1997: 65)

Preston interprets Feyerabend’s statement as:

According to Feyerabend, the most powerful arguments for instrumentalism are certain ‘physical’ (factual or scientific) arguments which scientists use to show that a particular theory cannot admit of a realistic interpretation. Such an instrumentalism, although it is only a local (or ‘restricted’) and not a global instrumentalism, is a genuine rival to realism... (Preston 1997: 66)

It is to be noted that the crucial point is Preston’s understanding of Feyerabend’s “physical arguments”. As explicated in previous lines, I have shown that Feyerabend is a realist who holds that theory explains but not predicts. If Preston’s assertion stands, Feyerabend’s incommensurability thesis will lose its legitimacy in his philosophy. For
Feyerabend equates instrumentalism with positivism. It is important to bear in mind that positivists adhere to stability thesis and meaning invariance, which objected by Feyerabend.

One may try to answer this criticism by ascribing an instrumental function to all principles... Such a procedure means acceptance of a sense-datum account of knowledge. (Feyerabend 1995: 83)

Furthermore, Feyerabend despises the discipline which is prediction-oriented. This makes his stance clear against instrumentalism.

Physics deals with causes, with substance, and the real constitution of things, and it is capable of proving the truth of its assertions; astronomy is concerned with prediction only, and may for this purpose introduce hypotheses which are actually false. Predictive success in astronomy is therefore no indication of truth and of factual relevance. (Feyerabend 1995: 184)

It is not a trivial matter to distant Feyerabend’s conception of meaning from that of positivists. It is because some commentators have misread Feyerabend. Fuller, the proponent of so-called “social epistemology”, has developed a false interpretation of Feyerabend’s incommensurability thesis, in the light of his verificationist account. He claims that Feyerabend’s incommensurable theories “do not bear the same burden of proof” (Fuller 1991:100). In Fuller’s account, incommensurability is defined as a situation where “two theories having different verifiability conditions but the same truth conditions” (Fuller 1991: 100). Fuller has gone astray by saying that incommensurable theories obtain different meaning from experienced proof. Obviously, this positivist claim shall not be attributed to Feyerabend, for he has objected it.

Apart from this, there is a dispute if models are incommensurable. Such issue will be arisen if one holds that a refined model is a theory, as contended by Marry Morgan and Margaret Morrison (Giere 1999: 9). Forster has correctly pointed out that incommensurability thesis should not present any problem for model comparison (Forster 2000: 243). It is primarily because model is a mechanism for prediction. Hence, model
is different from theories, as in Feyerabend's account, the latter is the description of reality. Thus, the acceptance of incommensurability thesis does not rule out the possibility of comparing two models "with respect to the goal of predictive accuracy" (Forster 2000: 245)

According to Preston, Feyerabend constructs his first general characterization of incommensurability from the elaboration of impetus theory in "Explanation, Reduction, and Empiricism" (Preston 1997: 103). "Conceptual apparatus' of a new theory $T$ is incommensurable with that of an older theory $T'$", wrote Preston, if and only if:

1. The primitive descriptive terms of $T$ cannot be defined in terms of those of $T'$;
2. There are no 'bridge laws' connecting the two sets of primitive descriptive terms which are correct and assertable consistently with $T$; and
3. The principles of the conceptual apparatus of $T$ are inconsistent with those of $T'$

(Preston 1997: 104)

Hence, Feyerabend asserts that incommensurable theories use concepts that cannot be brought into the usual logical relations of inclusion, exclusion, and overlap (Preston 1997: 103). He concludes, "When using the term 'incommensurable' I always meant deductive disjointedness, and nothing else" (Feyerabend 1977b: 365, cited in Preston 1997: 103). According to Preston, it is the contextual theory of meaning that licenses Feyerabend's incommensurability thesis (Preston 1997: 104). Achinstein has identified the problem of this holistic theory of meaning. Incommensurable theories can neither contradict nor agree with one another, hence, it is difficult to comprehend "how two theories could be alternatives, rival accounts of the same domain" (Preston 1997: 105).

... if I assert $p$ and you assert $\neg p$, we are not and cannot be disagreeing, because the terms in my assertion are $p$-laden and so mean one thing, whereas those in $\neg p$ are $\neg p$-laden and so mean another. $\neg p$, then, is not the negation of $p$. In short, negation is impossible! (Achinstein 1968: 93, cited in Preston 1997: 105)
Achinstein also criticizes Feyerabend for attaching meaning of terms to a single feature, viz. theoretical context. Feyerabend has overlooked the facts that "knowledge of many factors may be involved in understanding a scientific term..." (Achinstein 1964: 508, cited in Preston 1997: 105)

Furthermore, Achinstein has complained that Feyerabend fails to clarify the meaning of "inconsistent theories", either in the relation of logical or not, when he describes the characteristics of incommensurable theories (Preston 1997: 105). Indeed Feyerabend holds that incommensurable theories are logical inconsistent, that is inconsistency of principles or laws, but it "does not fit with an incommensurability-thesis" (Preston 1997: 105-106).

If theories T and T' issue in logically inconsistent predictions, these must be expressible in some common (observation-) language, as a sentence of the form 'P & ~P', and this ensures that there is a logical or deductive relationship between the theories. These pairs of theories, at least, cannot involve meaning-changes, and cannot be incommensurable. (Preston 1997: 106)

In what language are these "principles" themselves formulated? Presumably... in order for them to be inconsistent with one another, they must be formulated, or at least formulable, in a common language (Shapere 1984b: 99, cited in Sankey 1999a: 14)

It is obvious that Feyerabend's incommensurability thesis faces a dilemma, viz. he must presuppose meaning invariance if he claims that theories are logically inconsistent. However if he does so his incommensurability thesis will be shaky, for it requires meaning variance. It is nothing better if Feyerabend turns to hold that theories are not logically inconsistent. For "his case against the 'consistency condition' would be crippled" (Preston 1997: 106).

In his subsequent writings, Feyerabend does not take the relation between incommensurable theories to involve inconsistency (Sankey 1999a: 14). In his reply to Achinstein, Feyerabend has laid down new criteria for meaning change. He has
"repudiated the extreme holistic thesis that all changes in theory are changes in meaning."

(Preston 1997: 106)

... a diagnosis of stability of meaning involves two elements. First, reference is made to rules according to which objects or events are collected into classes. We may say that such rules determine concepts or kinds of objects. Secondly, it is found that the changes brought about by a new point of view occur within the extension of these classes and, therefore, leave the concepts unchanged. Conversely, we shall diagnose a change of meaning either if a new theory entails that all concepts of the preceding theory have zero extension or if it introduces rules which cannot be interpreted as attributing specific properties to objects within already existing classes, but which change the system of classes itself. (Feyerabend 1995: 98)

Achinstein finds these new criteria for incommensurability problematic. He claims that in order for "a new theory to entail that its predecessor's concepts have no extension, the two must have common meanings" (Preston 1997: 108). Shapere, on the other hand, claims that

... for the criteria of meaning-change to work each theory must incorporate a unique and determinate set of classification-rules. If the rules were not determinate we would be unable to discern whether the system of classes had changed or whether there had merely been a change in the extension of the old classes. If the rules were not unique we might have a situation in which a change of meaning had taken place relative to one set of classification rules, while relative to another set no such change had occurred. (Preston 1997: 108)

It is worth noting that Feyerabend argues that incommensurability is relative to our interpretation of theories, in 1965. He has now overridden his previous view that it is only observation statement needs interpretation and not theory:

It is important to realize that these two criteria [refers to new criteria for meaning change] lead to unambiguous results only if some further decisions are first made. Theories can be subjected to a variety of interpretations, and the relation of concepts to practice can also be seen in many different ways. Not every interpretation leaves its mark on current procedures. Interesting ideas may therefore be invisible to those who are concerned with the relation between existing formalisms and 'experience' only. It follows that we must (a) adopt a
certain notion of ‘interpretation’; and (b) choose from among the various kinds of interpretations consistent with this notion the particular one that we prefer. Questions concerning constancy or change of meaning have an unambiguous answer only after the decisions just described have been made. (Feyerabend 1995: 98)

There are various ways of theory interpretation, according to Feyerabend. He maintains this thought at least until his publication of *Science in a Free Society*, 1978.

Of course, theories may be interpreted in different ways, they may be incommensurable in some interpretations, not incommensurable in others. (Feyerabend 1978: 68)

Preston holds that “Feyerabend seems to have thought that each theory, under a realistic interpretation, does indeed give a unique and determinate classification of entities.” (Preston 1997: 108)

Under such an interpretation, a theory’s rules of classification can simply be read off from it, and any theory with a different set of classification rules is ipso facto a different theory. This saddles Feyerabend with a very tight criterion of identity for theories... But, if it works, it means that a realistic construal of a theory determines that theory’s ontological commitments, settling the question of which kinds of object that theory really countenances. (Preston 1997: 108-109)

Feyerabend finally asserts that incommensurability is a relative concept, in his later years. This shows that his notion of incommensurability is affected by his relativist stance.

It is not too difficult to dream up interpretations which make incommensurable theories commensurable but not a single philosopher has so far been able to let his interpretation solve all the problems solved by the interpretation it is supposed to replace. (Feyerabend 1978: 69)

A study of incommensurability in the sciences will therefore produce statements that contain meaning-terms – but these terms will be only incompletely understood... (Feyerabend 2000: 190)

In his *Putnam on Incommensurability*, 1987, Feyerabend stresses his notion of incommensurability:
First, incommensurability as understood by me is a rare event. It occurs only when the conditions of meaningfulness for the descriptive terms of one language (theory, point of view) do not permit the use of the descriptive terms of another language (theory, point of view); mere difference of meanings does not yet lead to incommensurability in my sense. Secondly, incommensurable languages (theories, point of view) are not completely disconnected – there exists a subtle and interesting relation between their conditions of meaningfulness. In *Against Method*, I explained this relation in the case of Homeric commonsense versus the language aimed at by the early Greek philosophers. In *Philosophical Papers*, Vol. 1, chapter 4, I explained it in the case of Aristotle and Newton. (Feyerabend 2002: 272)

It is obvious that by appealing to relativism Feyerabend fends off the difficulties he faces with his incommensurability thesis. He has, at this later stage, deemed both his early and later account of incommensurability thesis legitimate. Sankey asserts that Feyerabend associates incommensurability with incompatibility (Sankey 1999a: 14-15). He contends,

To see how the principles of such theories may be incompatible, due emphasis must be placed on the fact that incommensurable theories differ at the level of ontology. (Sankey 1999a: 15)

Sankey contends that it is the ontology of theories that makes them incommensurable or incompatible. Feyerabend agrees that when there is a transition from a theory $T'$ to a wider theory $T$,

What does happen is, rather, a replacement of the ontology (and perhaps even of the formalism) of $T'$ by the ontology (and the formalism) of $T$, and a corresponding change of the meanings of the descriptive elements of the formalism of $T'$… (Feyerabend 1995: 44-45)

Feyerabend insists the role of ontology in incommensurability thesis until his later year. However, since he is consistent in saying that incommensurable theories are due to ontological replacement, he appears to hold a false conception of incommensurability. For if the difference between two theories is at the ontological level, it is meaningless to argue about the theory comparison. There is no scientific ground for such comparison to
be taken place. Two ontological different theories are neither comparable nor incomparable scientifically. However, what we can argue about is merely their metaphysical comparability.

Hence, the relationship between two ontological different theories can be described only by the notion of supervenience. It is defined as "one domain, $\alpha$, supervenes on a second domain, $\beta$ iff any change in $\alpha$ requires a change in $\beta"$ (Seager 2001: 480).

A domain of phenomena is said to supervene on another domain – in this case higher-level phenomena are said to supervene on lower-level phenomena – when no difference at the supervening level is possible without some difference at the lower level supervened on (but not vice versa) (Kim 1978, cited in Dupré 2001: 403).

The relation of supervenience is not, in the first instance, a relation between theories, but rather between ontological domains (Seager 2001: 481).

Thus the supervenient phenomena are fully determined by the state of the phenomena on which they supervene. States of the mental are often said to supervene on states of the brain... (Dupré 2001: 403)

Perhaps it is due to Feyerabend’s intention to use the term “theories” in the wide sense that leads his incommensurability thesis to be more suitably understood in the light of supervenience.

The theories (systems of thought, forms of life, frameworks) are used in their strongest form, not as schemes for the processing of events whose nature is determined by other considerations, but as accounts or determinants of this very nature (realism) (Feyerabend 1995: ix)

Feyerabend’s definition of theories is ontological. In the strongest sense, every theory is incommensurable with others. For the essence of a theory is characterized by its ontology. If two theories share the same domain of ontology, they will be interpreted as one theory and no longer different.
Thus, we can hardly interpret Feyerabend’s incommensurability thesis merely at scientific level. His vague use of the term “theory” has indeed extended incommensurability thesis into his philosophy of social science. I shall elaborate this in next chapter.

3.2 The relationship between Feyerabend’s methodological principle and his incommensurability thesis

In this section I shall elaborate the relationship between Feyerabend’s methodological principle and his incommensurability thesis from general and specific approaches.

3.2.1 General approach to the said relationship

Sankey has formulated methodological incommensurability in his *Incommensurability – An Overview*, according to which “there are no shared, objective methodological standards of scientific theory appraisal” (Sankey 1999: 10). In another words, “alternative scientific theories may be incommensurable due to absence of common methodological standards capable of adjudicating the choice between them” (Sankey 1999: 10). Feyerabend has not presented his incommensurability in this light (Sankey 1999: 10). On the contrary, he holds that it is possible to compare incommensurable theories objectively. Therefore, theory choice is possible.

It is to be noted that Feyerabend does not provide a satisfactory account for comparison between two incommensurable theories. He is vague in his discussion about theory comparison. However, it is clear that he denies that theories are to be compared by content, or verisimilitude (Feyerabend 1978: 68). “But there certainly remained other methods.” (Feyerabend 1978: 68)
Preston has identified eight ways, Feyerabend deemed available, to compare incommensurable theories:

2. devising a kind of ‘crucial experiment’ in which one of two rival strong alternatives is confirmed (Feyerabend *PPI*: 116, cited in Preston 1997: 117).
3. comparing the efficiency with which each theory reproduces the ‘local grammar’ of sentences which are directly connected with observational procedures (ibid, cited in Preston 1997: 117)
4. constructing a model of one theory within another and rejecting the former if the model violates highly confirmed laws (ibid, cited in Preston 1997: 117)
5. inventing ‘a still more general theory describing a common background that defines test statements acceptable to both theories’ (Feyerabend 1965a: 216-17, cited in Preston 1997: 117)
6. conducting an internal examination of the two theories in order to determine whether one has a closer connection to observation than the other (ibid, cited in Preston 1997: 117)
7. using various formal criteria such as linearity, coherence, predictive power, the number and character of approximations used (Feyerabend 1977b: 365, cited in Preston 1997: 117)
8. using more informal criteria such as ‘conformity with basic theory ... or with metaphysical principles’ (ibid, cited in Preston 1997: 117)

However, Feyerabend does not pay equal attention to them. Some of them just mentioned without a detailed examination in his writings (Preston 1997: 117). Though Feyerabend concedes that some of these methods are subjective, he does not defend for this point, for this is the manifestation of his principle of proliferation. He defines this principle as:

Invent, and elaborate theories which are inconsistent with the accepted point of view, even if the latter should happen to be highly confirmed and generally accepted. (Feyerabend 1995: 105)

Feyerabend holds that there must be plurality of alternatives available for theory comparison, for the sake of scientific progress, and therefore we must hold fast to methodological pluralism and principle of proliferation. His assertion has been criticized by Achinstein. The latter contends that the principle of proliferation is implausible
practically. Achinstein has sharply pointed out that rational judgment must be involved in constructing an alternative to the existing theory.

Is it reasonable to invent and elaborate theories which are inconsistent with the accepted point of view, even if the latter should happen to be highly confirmed? The answer depends on the point of inventing and elaborating such theories. According to Feyerabend, it is to criticize and reform the status quo... It is a Good Thing if you keep scientists and others on their toes. But will you accomplish this by following Feyerabend’s Principle of Proliferation? Not in general, you won’t. You are wasting your time... The point is that your alternative cannot be just any wild suggestion that might be dreamed up to charm the restless natives. It has to have some plausibility to serve the aims of criticism and reform. (Achinstein 1967: 422)

However, Achinstein claims that Feyerabend appears to recognize this limitation of principle of proliferation (Achinstein 1967: 423).

A few pages after announcing Proliferation he sets some limits: “There ought to be some independent reason to accept T’ [the alternative theory that you are inventing and elaborating], and one of the best reasons is, of course, evidence in favor of it...” (Achinstein 1967: 423)

Achinstein’s claim is not true. He has overlooked the consecutive line put by Feyerabend, “Such evidence need not be there from the beginning and an alternative T’ should not be eliminated simply because it does not yet provide it” (Feyerabend 1995: 109). If Feyerabend were to assert that rational judgment must be the limit of the principle of proliferation in theory creation, his incommensurable theories will be plausibly incompatible in practice; and hence will not necessary lead to relativist incommensurability thesis in his later years, viz. the claim that incommensurability between theories is relative to the interpretation (Feyerabend 1978: 68). It is obvious that Feyerabend does not set limit for the principle of proliferation. This explains how he swerves from a rationalist, who advocates scientific progress, to a relativist, who holds “anything goes”.

Feyerabend’s proposal of methodological pluralism is part of his pluralist view. It stems from his attack of theoretical monism.
A single theory in terms of which everything can be explained—as was the case with Newton’s theory of celestial mechanics—is almost like a metaphysical system. It is impossible to free oneself from it; one can hardly imagine that it might be false; and one has no means of testing its correctness. (Feyerabend 1963e: 96-7, cited in Preston 1997: 76)

Hence, it is obvious that a monolithic theory that tries to explain everything within its theoretical system can hardly be proved false or correct. For it discourages the existence of its rivals. Thus, there is no ground for the theory to progress since there are no other sources of reference. Feyerabend means that the proliferation of theory will result in the proliferation of methodology. In return, the latter will promote the former. The cycle thus improves our knowledge and drives science to progress.

Science is superior for two reasons: it uses the correct method for getting results; and there are many results to prove the excellence of the method. (Feyerabend 1978: 98)

In the above quotation, it is clear that Feyerabend implies that theory and method are interrelated and interacted. Thus, incommensurability is conducive to pluralistic methodology, and in return it advances science. It is not strange to claim so because Feyerabend holds that theories are incommensurable in nature.

Feyerabend pushes further by claiming that principle of methodology is nonsense. For there is no single method that scientist must hold fast to. Methodology is a relative concept. “Anything goes”.

there is no ‘scientific method’; there is no single procedure, or set of rules that underlies every piece of research and guarantees that it is ‘scientific’ and, therefore, trustworthy. Every project, every theory, every procedure has to be judged on its own merits and by standards adapted to the processes with which it deals. (Feyerabend 1978: 98)

Though there is a slight change of his thought, it is worth noting that the main concern of Feyerabend’s methodological principle throughout the course of his career is consistent,
viz. progress. In Feyerabend’s later year, science is not given any privilege over other disciplines. It is because privileged science will suppress the progress of human civilization, by retarding the development of other branches of knowledge and practices.

The only principle that does not inhibit progress is: anything goes. (Feyerabend 2000: 14)

And my thesis is that anarchism helps to achieve progress in any one of the senses one cares to choose (Feyerabend 2000: 18)

It is just a stone’s throw from pluralism to relativism. According to Preston, Feyerabend’s critique of methodological monism leads to his recognition of “the disunity of science” (Preston 1998: 426). The consequence that results is that “there can be many different kinds of science” (Feyerabend 1988a: 3; Feyerabend 1991c, cited in Preston 1998: 427). This relativist view is the theme of Feyerabend’s later post-modernism, which largely shapes his philosophy of society.

3.2.2 Specific approach to the said relationship

Feyerabend tells us that incommensurable theories can be compared. However, it appears that there is no ground for such comparison, as he has objected the existence of common observation statement. His rejection of empiricism perhaps a disastrous move. For this makes the theories lose their empirical standards in theory appraisal. Hoyningen-Huene has illustrated how theories are compared, for both commensurable and incommensurable theories.

Comparing two incommensurable theories with respect to their capabilities is substantially more complicated than comparing commensurable theories. With commensurable theories that employ substantially the same apparatus of concepts, one compares the predictions of the two theories with respect to their empirical precision. For the single predictions of the two theories this is not problematic, because for each prediction of the one theory there is a corresponding prediction of the other. Difficulties can only arise if one theory is better than the other theory in a certain area, while the other theory is better in another area.... With
incommensurable theories, one cannot compare them by superimposing their separate single predictions, because of the difference in their concepts and the untranslatability of both theories or, to put it differently, because they conceptualize differently more or less the same domain. That is why certain claims of one theory cannot find counterparts in the other theory, and what is from the perspective of the one theory evaluated as a substantial achievement is from the perspective of the other theory simply not understandable. (Hoyingen-Huene 2000: 105)

It is clear that Feyerabend’s elimination of empirical element of theory results in the incomparability of any theory, regardless they are commensurable or incommensurable. Thus, crucial experiment seems to be impossible in Feyerabend’s philosophy, as pointed by Feigl and Nagel (Preston 1997: 44). As the result, theory choice becomes a myth, for there is an absence of a common observation statement “which is affirmed by one of the theories and denied by the other” (Preston 1997: 44).

This is apparently an unfavorable consequence faced by Feyerabend. He does not concede the accuse of the impossibility of theory comparison, that posed to him. For if he does so, he will contradict his scientific realist stance. Thus, Feyerabend must demonstrate that crucial experiment is possible in the absence of common observation statement.

It is a consensus that crucial experiment is only possible for low-level theories in Feyerabend’s account. He asserts that “background theories provide a common interpretation for the observation-statements of both theories” (Preston 1997: 44). In another words, it is not the observation that immediately determines the choice of theory but its theoretical interpretation. Apparently his crucial experiment for theory appraisal is not same with that of empiricists.

To adjudicate between high-level theories, Feyerabend proposes pragmatic theory of observation. It is a behaviorist approach, for it stresses on the causal interpretation of observation statements, viz., the cause of their production, rather on the interpretation of their meaning.
... we must carefully distinguish between the causes of the production of a certain observational sentence, or the features of the process of production, on the one side, and the meaning of the sentence produced in this manner on the other. (Feyerabend 1995: 93)

Feyerabend claims that observation statement serves the purpose of describing the reality and as a methodological standard. In another words, observation statement can be used as instrument in adjudicating between incommensurable theories (Feyerabend 1995: 93).

In the process of theory comparison, meaning that encapsulated by observational term is not significant. Predictive success of observation statement is the key determinant in theory choice. The observation statement that able to lead to a predicted result will make the theory which contains it stands out from its rivals.

The pragmatic theory of observation implies that a theory can be tested by assessing its ability to mimic the linguistic and behavioural patterns of normal human beings, who are to be regarded, in this respect, as measuring instruments. (Preston 1997: 53)

[Theories] are good instruments if the information they provide, taken together with information about initial conditions characterizing a certain observational domain $D_0$ would enable robot without sense organs, but with this information built into it, to react in this domain in exactly the same manner as sentient beings who, without knowledge of the theory, have been trained to find their way about $D_0$ and who are able to answer, 'on the basis of observation', many questions concerning their surrounding. This is the criterion of predictive success, and it is seen not at all to involve reference to the meanings of the reactions carried out either by the robot or by the sentient beings... All it involves is agreement of behaviour. (Feyerabend 1995: 93)

Preston has pointed out that there is a link between Feyerabend's pragmatic theory of observation to his scientific materialism and to his scientific realism (Preston 1997: 53). However, Feyerabend fails to account for the theory choice between high level theories, by applying his pragmatic theory of observation. For there is a doubly theory-laden of observation statement that insisted by Feyerabend, as pointed by Nagel (Preston 1997: 44). According to Feyerabend, the observation statement does not contain observational core, so it cannot be verified empirically. The meaning of the observational terms "can
be explained only by explaining the theories that inform them” (Preston 1997: 44). Thus, there is a circular of interpretation (Nagel 1979: 79, cited in Preston 1997: 44). Therefore, high-level theories cannot be adjudicated.

3.3 An epistemological approach to the examination of Feyerabend's Incommensurability Thesis

Most of the attacks posed to Feyerabend’s incommensurability thesis are semantic-oriented. Less attention, to my knowledge, has been paid to the epistemological respect of his incommensurability thesis. I shall contend that it is not a least significant issue, as Feyerabend’s incommensurability thesis arises from his epistemological assumption, viz., there is no “observational core” (Feyerabend 1995: x) in theory interpretation. This marks the difference between him and the adherents of theory-laden of observation, who do not disavow the epistemological significance of experience. In short, I shall hold that Feyerabend’s total rejection of the epistemological status of experience give birth to three issues which I deem may place his incommensurability thesis at a shaky ground. However, I limit my examination on the legitimacy of Feyerabend’s incommensurability thesis to his early and rationalist stance.

First, Feyerabend, as a scientific realist in his early year, advocates scientific progress and truth. From his critique of empiricists’ theory of meaning, he rejects the role of psychological element in theory interpretation. For he asserts that subjectivity is introduced. Hence, his preservation of objectivity in scientific interpretation is a strategy to preserve truth. Indeed Feyerabend implies that incommensurable theories should be encouraged if we would like to pursue progress and truth. It is because in the comparison of incommensurable theories, better theory will stand out. On the other hand, Feyerabend has no choice but to regard the existence of logical consistency within a theory as a criterion of truth. This does not contradict with his view that there is an absence of logical consistency between theories, viz., his concept of incommensurable theory. However, though Feyerabend attributes objectivity and logical consistency as criteria of truth to theory, truth may only be guaranteed while both criteria present. In the absence
of one criterion, truth is unattainable. For an objective theory may not be consistent, and vice versa. What follows is that truth and progress are unattainable via the comparison of incommensurable theories, due to the likely falsity of a single theory.

Second, Feyerabend seems to agree that observation is the source of knowledge. It is because he holds that it is observation and not theory that needs interpretation. However, Feyerabend does not account for the operational mechanism of theoretical interpretation of observation. He is obscure in his writings how does an observation statement be interpreted in the theoretical context. His favorite explanation on this is by advising us to interpret an observation statement “realistically”. However, it is for sure that Feyerabend guarantees us the obliteration of empirical element in the interpretation process. I shall deny it. For Feyerabend’s avowal of observation as a source of knowledge has established a causal-effect relationship with the product of interpretation, viz., theory. It is no doubt that theory is at least partly derived from observation via causal-effect reasoning. Causal-effect reasoning requires judgment to be made. Thus, the existence of judgment in observation statement interpretation implies that Feyerabend’s critique of empiricism has applied on his thought. Stability thesis and meaning invariance will survive, whereas incommensurability thesis loses its legitimacy.

Third, Feyerabend seems to uphold the foundational status of observation statement in the system of knowledge. I shall first distinguish between the “source” and “foundation” of knowledge. They are not identical. What is the source might not be the foundation of knowledge. In the history of British empiricism, Locke holds that experience is the only source and foundation of knowledge; whereas Hume contends that experience and reason are the source of knowledge but only the former laid the foundation of knowledge. In the case of Feyerabend, he deems observation as the source of knowledge while observation statement as the foundation of knowledge. Observation does not amount to observation statement in Feyerabend’s account. For Feyerabend holds that the meaning of observation statement is conferred by theoretical statement. Hence, he implies that it is impossible to obtain the same observation statement from a single source of observation. It is for this reason Feyerabend claims that incommensurable theories disallow meaning.
invariance. My question is, if observation statement has no epistemological significance, as claimed by Feyerabend, how is it possible to arrive at a significant theory? My point is, sense cannot arise from nonsense.

In conclusion, Feyerabend's incommensurability thesis is built upon a wrong assumption. Feyerabend may not be trapped in such predicament if he endorses theory-laden of observation instead of his "full theoretical" (Feyerabend 1995: x) approach to observation.
End note

(1) Besides, the main themes of Feyerabend’s thought is best indicated by the title of his philosophical papers volume 1, *Realism, Rationalism and Scientific Method*.

(2) It is not the case for Kuhn’s incommensurability thesis, for he is widely known as anti-realist. (Bird 2003: 690)

(3) Some realists incline to overemphasize the role of reference (of a theoretical statement) in theory-choice, that is, the truth-value (Kenny 2000: 110).

A realist ... holds that (1) the sentences of that theory are true or false; and (2) that what makes them true or false is something external—that is to say, it is not (in general) our sense data, actual or potential, or the structure of our minds, or our language, etc. (Putnam 1975: 69f, cited in Fraassen 1980: 8)

(4) In a letter dated 26 November 1971 to Lakatos, Feyerabend revealed his difficulty with incommensurability thesis.

I have given up my incommensurability paper in disgust. The stuff bores me to death... (Motterlini 1999: 262)

(5) Preston has pointed out the connection between Feyerabend’s “Thesis 1” and “incommensurability thesis”. Preston does not treat the former concept as a version of incommensurability thesis. Nevertheless, he regards it as the pre-matured conception of incommensurability thesis. The reason I view both of them as versions of Feyerabend’s incommensurability thesis is that the nature of dispute that gives rise to them are similar, viz., stability-thesis and meaning invariance are meaning-oriented. (Preston 1997: 30, 40, 61, 103, 107, 99-104). In addition, they have their common root in Feyerabend’s scientific realism and methodology.


(7) As I have pointed out in chapter 2, Feyerabend holds that scientific progress ought to be the aim of doing science. He claims that the consequence of advocating stability thesis and meaning invariance is stagnation of science.

(8) Feyerabend’s incommensurability thesis encounters attack from Shapere, Putnam, Achinstein and etc. (Preston 1997: 104)

(9) On the contrary, positivists believe meaning can be obtained from the reality, according to Feyerabend.
(10) This is the main doctrine of early Wittgenstein which Feyerabend opposes to.

(11) According to Hempel, modern empiricist has two criteria of meaning for a statement, viz., analytic and non-analytic.

Contemporary logical empiricism has added to it the maxim that a sentence makes a cognitively meaningful assertion, and thus can be said to be either true or false, only if it is either (1) analytic or self-contradictory or (2) capable, at least in principle, of experiential test. (Hempel 1965: 214-215)

(12) It is called "defeatist attitude" because it will not encourage scientific progress, for Bohr's belief discourages pluralism in scientific practice.

(13) Especially empiricists in British analytic tradition.

(14) Modified from Chisholm's original question to "the myth of the given", that is: "What justification do I have for thinking I know that a is true?" (Chisholm 2003: 170)

(15) An observation statement must manifest phenomenological adequacy, which indicate the sufficient correspondence between the phenomenon and the statement which meaning is determined by the phenomenon. (Feyerabend 1995: 25)

(16) Feyerabend does view science as a self-correcting enterprise in the light of his methodological pluralism.

(17) Feyerabend holds that thesis I is a realistic approach to the meaning of observation language.

(18) The term of M is descriptive term which explains the observable phenomena. It is different from observable term in the sense that the latter is a sense-data term whereas the former is a theory-laden term.

(19) Mediating terms of S "connect theoretical terms and observational terms" (Feyerabend 1995: 38). Feyerabend defines mediating terms as "those terms of 'S' which are neither observational terms, nor terms of 'M'." (Feyerabend 1995: 38)

(20) It is because Feyerabend objects positivists' stability thesis.

(21) Surprisingly, Preston does not mention a single word about Feyerabend's principle of semantic independence in his Feyerabend, though he does cite from Feyerabend's On the interpretation of scientific theories. Indeed,
Preston claims that the link between Thesis I and Incommensurability Thesis is indicated by the following lines of statements:

I interpreted observation languages by the theories that explain what we observe. Such interpretations change as soon as the theories change. I realised that interpretations of this kind might take it impossible to establish deductive relations between rival theories (SFS, p.67, cited in Preston 1997: 103)

(22) Feyerabend means that the change of ontology of a theory contributes to the meaning change of its observation statements.

(23) However, Oberheim and Hoyningen-Huene deny Feyerabend’s semantic inclination in Incommensurability Thesis (Oberheim and Hoyningen-Huene 1997). They account for Feyerabend’s thought in the light of neo-kantian. Oberheim was a student of Sankey and Hoyningen-Huene. His PhD thesis is specialized in early Feyerabend, under the supervision of Hoyningen-Huene.

(24) H=height of object above ground level; R=radius of the earth.

(25) This is coherent with his encouragement of ad hoc hypothesis and principle of proliferation.

(26) Preston interprets Feyerabend as a realist. However, he claims that Feyerabend’s defense of local instrumentalism “was only tactical” (Preston 1997: 70)