The Mode of Knowledge in Science and Social Science: A Philosophical Examination

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Abstract

This paper is a critical reflection on the bogus claim made by modern science to be in possession of a procedural compass which any discipline or enquirer that wants to arrive at knowledge would need to grab. It also examines the hopeful, but failed attempt by the inaugurators of social science to follow this compass in their study of social phenomena. The paper laments that the idea of a "Scient ific Method" which would unify all the sciences was the major problem which social science had to confront. It discusses the possibility of a prescriptive methodology that would suffice all the sciences. It argues that the failure of the project of positivism need not lead to the anarchical and radically relativistic alternatives found in the works of some critics of Kantian foundationalism– men like Rorty, Kuhn, Feyerabend, Quine, etc. The paper, therefore, concludes by raising some fundament al questions against the postmodern rejection of foundationalism and the wonders which is better and plausible: the totalitarianism and hegemony of foundationalism or the relativism and anarchy of postmodernism?

1. Introduction

As at the time what is today variously characterized as "social science", "normative science", social studies", "humanities", etc., began, its intention was to ape the natural sciences hollow. August Comte gave the name "positivism" to his type of philosophy which sought to apply the system of natural science to social realities. However, what is it that science embodies which made Comte and later positivists to want to follow it? For Conte, there are three stages of the evolution of man's belief: the theological, the metaphysical and the positive; and the positive is so-called "because it confined itself to what is positively given, avoiding all speculation. Comte's position is a version of traditional empiricism…" [i]

In this essay, we shall try and explain what is meant by "mode of knowledge" in order to see whether there are, can be, or should be, any difference in the mode of knowledge in science and the so-taunted "social sciences". Next, we shall look at the image of science and see whether we can unearthen that "thing" which it embodies and on the basis of which the social science saw it as the conveyor of knowledge. We shall then examine some reactions to positivism in both science and social science, with a view to seeing whether, as Jurgen habermas puts it, "positivism marks the end of the theory of knowledge… [and] positivism stands and falls with the principle of scientism; that is, that the meaning of knowledge is defined by what the sciences do and can thus be adequately explicated through the

methodological analysis of scientific procedures".[2] And in this critique of positivistic science, we shall consider the views of critics like Paul Feyerabend, Thomas Kuhn, Richard Rorty and especially the relativistic conclusions of authors like Peter Winch and Hans-Georg Gadamer. We shall, in the course of this essay, explore the link between science, positivism, and knowledge and, by way of conclusion; we shall then raise some fundamental questions on the post-modernist project, regarding the possibility of a prescriptive methodology in science and epistemology.

Our intention is to re-examine the age, old battle by the social sciences to establish themselves as science, as well as to remind the physical sciences that in this age when *information* has become more important than *energy* and when there is a tilt towards multi-disciplinary research, neither the normative nor the physical sciences can proceed in a compartmentalized, exclusive manner. Methodological concerns in the sciences are now an admixture of metaphysical, sociological and psychological issues, the determination of which lie far outside the restricted cabin of the practicing scientist. Scientific progress is way beyond what the scientist is doing or says he is doing. A lot now depends on what the philosopher (from his hallowed comprehensive, critical and presuppositionless pedestal) says the scientist is doing

2. A Word On "Mode of Knowledge"

The term "mode" as technically used in this essay can be said to mean "a way, arrangement or condition in which some thing is done or in which something happens". And in the context in which we are using it, by "mode of knowledge", we simply mean the "way" of knowledge. However, the phrase "the mode of knowledge" may still not be very intelligent but if we interpret it to mean "the way of the acquisition of knowledge", then we would then say that we have arrived at that familiar, yet multifariously – penetrating, area known as "Epistemology". Epistemology was known in the history of philosophy (at least before Edmund Gettier's 3-page article change our understanding[3]) as the "theory of knowledge". And it would appear that the whole project of the modern period, and with it, modern science, was an attempt to provide epistemic certainty for most of the things we claim to know.

Every scientist is interested in two broad concerns: to discover to truth and to conquer nature. The method to be followed would depend or which goal is to be pursued. Again, achieving these would largely depend on how quickly and well man is able to overcome his original and primitive conditions of ignorance, impotence and finitude. That the scientist is condemned to the fidelity of empirical verification and the simplicity of logical formulation appears to have put the scientist in a strait jacket. But it does appear that the former (fidelity to empirical pursuit) might have to be slackend or even given up at some point, if some disciplines (such as mathematics) would be counted as "science". For mathematics is not exactly empirical. Although recent debates in the philosophy of Arithmetic's have tended to bring platonic views to the fore again, we must note here that people like Quine have argued that mathematical entity is the only type of abstract entity that can be verified. Thus, "mode" here is not used in its scholastic manner as a focusing of being into some abstract form. I use it technically as "method".

3. The Colossal Image of Science

The word "science has its roots in the Latin word "*scientia*" which means "knowledge" and goes back to the word "*scire*" which means "to know". We do not intend to belabour any concept clarification because we are only interested in this etymology of science so as to explain the context of our discussion.

We can see that the modern conception of science cannot be divorced from this epistemological project. If "science" means "knowledge", then it can be seen why it exerts hegemony on what men want or claim to know. The questions were two fold: WHAT can we know? And if ever we are able to identify that "what", the next question was, HOW can we know this "what"? Science claimed that the objects of our knowledge are material entities or whatever can be subjected to the fidelity of empirical verification. Modern science, therefore, combined the ontological with the epistemological, and gave priority to the latter. This confinement to material reality by science has often been a source of disappointm ent when people expected from science something it was not able to provide. For these people, science begins as an object of blind idolatry and ends up as an object of hatred and contempt.

Modern science, born in an "Age of Reason, gave empiricist epistemology its classical expression. No wonder in Newtonian physics, the six steps to scientific enquiry begins with "Observation", and by the time, logical positivists arrived on the scene, they raised the old idea of science (that the real must be empirically *Verifiable*) to status of irrevocability, inevitability and incorrigibility.

In his lucid work. *The Rationality of Science,* W.H. Newton-Smith has looked at this image of science especially as regards its claim to being "the very paradigm of institutionalized rationality". Whatever was "the scientific" became synonymous with "the rational". It was Science that changed reason from being identified with just "commonsense". It was science that made Reason transit from "reasonableness" to "rationality"[5], that is, to "logica l consistency". And so, whatever that was not logically consistent with the procedures of modern science had to be jettisoned as "doxa" (opinion). For indeed, the truly epistemological was the scientific! No wonder Enan McMullin says that the two faces of science are (a) Logicality: which is the formal relation between evidence and hypothesis; various modes of influence to justify moving from one step of the argument to another or to assess its validity as a whole; (b) Interpretation: the atta ching of meaning, the perceiving of structure, the cognition of something as an instance. He, therefore, avers that:

> the mistake of logical positivists was to reduce rationality to logicality in the hope of making scientific verification a simple non-controversial affair thus making possible a conveniently sharp line of demarcation between science and the fuzziel sorts of human activity…Think of the dear dead days when science was supposed to provide a nice tight model of what knowledge **ought** to look like: objective, empirically-grounded, progressive, all of the things which metaphysics evidently was not. But now that we are made to imitate the poet or the propagandist, metaphysics may once again fail to qualify, this time however, because it is too rigorous and logical and abstract! [6]

But what is this "something" that science possesses which enables it to put on this toga of ultimacy? It is obvious for anyone with a little knowledge of natural science that this

"something" is called the "scientific method". Therefore, anyone who proposes to acquire the "authentic" knowledge offered (or shall we say "brandished") by science, must necessarily follow this scientific method – whatever it may be. And so Natural Science became somewhat a watershed for all other areas of enquiry. This method has been varied in different epochs in the history of science. From, Positivist Inductionism to Popperian Falsificationism down to the revolutionary "Anything-Goes Me thod" thesis of people like Paul Feyerabend, it has been a struggle as to what exactly constitutes the method of science and what method of science scientists should follow. It is important to note that these methods are later conjectures. What we could call the "original scientific method", *the method* with which modern science began its imperialistic grip on knowledge, were actually deductions made from Newtonian Mechanics, especially as Newton enunciated it in his *magnum opus, Mathematical Principles of Natural Philosophy.*[7] *The methodological principles deducible from that work are; (1)* Observation *(2)* Accurate definition of uni versal categories for description of the regular features of what is observed. (3) The inductive generalization of simple universal laws of expressing such regularities. (4) Postulation of relevant explanatory hypothesis. (5) Detailed comparison of the consequence of a hypothesis with the inductive generalizations, rejecting those hypotheses that conflict with the inductive generalization. (6) The axiomatic organization of those hypotheses which survived these tests, and demonstration of the rest of the theory as following from them. These 6 steps, more or less, articulate in summary the original scientific method. It appears that whatever method science adopts, it depends on what its ends or objectives are: the conquest of nature, the discovery of truths, the formulation of problems, etc. As Ravetz noted:

> A corpus of "methods" has a special character, which may seem paradoxical and at variance with the objects and results of the activity it governs. For methods cannot be establish ed "scientifically", through arguments resting on controlled experience; this is partly because there is no simple test of the "correctness" of a particular method, and even more because the principles and precepts are incapable of a fully explicit, public statement. [8]

Bertrand Russell makes a distinction between *theoretical* and *practical* science, with the former concerning itself with a desire to "understand" the world while the latter is interested in an attempt to "change" the world, based on that understanding. For Russell, there can be no discussion of modern philosophy without modern science because:

> the new conceptions that science introduced profoundly influenced modern philosophy. Descartes, who was in a sense the founder of modern philosophy, was himself one of the creators of seventeenth century science. Something must be said about the methods and results of astronomy and physics before the mental atmosphere of the time in which modern philosophy began can be understood[9].

The method of science was so arresting that even those who go to the Universities to study philosophy would do a course on "Scientific Methodology" or "The Methodology of Scientific Enquiry". Descartes and Francis Bacon before him (who is said to be the founder

of modern philosophy in the analytic tradition) gave a fillip to the scientification of philosophy.

Edmund Husserl, the acclaimed father of phenomenology felt that true philosophy should be scientific and true science should be phenomenology. He jeered at Kant for lamenting that philosophy is not teachable and wonders how philosophy could be taught when it is not scientific. For him, therefore, if philosophy would be taught, it has to become scientific[10].

Whatever scientific discipline we consid er, we notice that the *constant and universal* feature of scientific endeavour is the general method which consists in its *persistent search for truth*. Scientists are fond of asking the questions, is it so? Why is it so? To what extent is it so? These questions or curiosity is the demand for the best available evidence, the determination of which falls within the province of Logic.

Scientific method is, therefore, the increasing *application of logic* as the common feature of all reasoned knowledge. No wonder then that some have defined Science as "*Organized Commonsense".* Furthermore, scientific method is also the way in which we test *assertions about reality* or nature, by examining the next available evidence for and against them. Thus, the historian, the anthropologist, the archaeologist are scientific to the extent that they are *critical, logical* and *empirical.* In our daily lives, we believe lots of things because others accept them and we make a lot of uncritical assumptions about reality. Thus, you would believe that the sun moves around the earth because we see it rise in the east and set in the west; or we may accept that the earth is flat because the ground around us is flat or we think that a girl we see is a good human being because she goes to church regularly and attends church meetings. More often than not, we learn that all that glitter are not gold. We discover too late that not all "seeing is believing"; such uncritical beliefs of ours do not stand up against critical scrutiny. Moreover, there is little agreement upon them. So we sometimes find ourselves called upon to change our opinions or su pport them.

We shall later consider, in this work, the possibility of a prescriptive methodology in science. But at this juncture, we would like to articulate how we arrived at scientific method. In the first place, how did the social sciences come into the picture? We noted that, traditionally, science has seen itself as the conveyor of knowledge and that this is made possible by its claim that it is in possession of a model with which we can attain that knowledge. This mode or model of acquisition of knowledge is what we have identified as the "scientific method" and what constitute knowledge in science are the laws, hypotheses, theories, etc, which are articulated through the painstaking following of this so-called "scientific method".

Traditionally, methodological concerns in science deal with two broad questions: what rules are available for the discovery of theories and, what principles justify our choice of one theory over another or others? If we are to employ brevity in stating these two concerns, we are simply asking for "rules of discovery" and "principles of justification or evaluation. The idea of a fixed method or fixed theory of rationality is too naïve, restrictive and hegemonic, because these rules and principles are created by members of a particular scientific community, using their own cultural conceptual scheme, and "legislated" for anyone that would be part of scientific practice. This is the crux of the argument of postmodern scientists, especial ly Paul Fegerabend[11] as we shall see later.

4. The Social Science and Positivism

Having identified that "thing" that makes the natural science "tick", i.e, scientific method. We now proceed to see whether such can be applicable to social science if we intend to get knowledge of social or human realities. We identified, in our characterization of physical knowledge, that the object of enquiry is "material". However, we know that the object of enquiry in social science is man. The physical scientist studying inanimate objects, which do not choose their behaviour, does notpass value (moral) judgments on the facts he discovers. He does not blame or praise the atom for acting the way it does, although moral judgments can be made by the scientist regarding the purpose of which man's knowledge of the atom is put. The social scientist, on the other hand, who studies human behaviour, which often involves situations requiring choice between alternatives, makes moral judgments about what he observes. And this value-fact distinction has been the Achilles' heel of any scientific study of man since Auguste Comte's positivism. Alan Ryan captures this problematique when he talks about

> the one issues which has obsessed philosophers of the social sciences: are the social sciences a branch or branches of the natural sciences; and is the kind of knowledge they produce the same as that produced by the natural science?...
> The success of Newtonian mechanics and its accompanying, if not wholly congruous, atomism has long been the symbol of the ambition to derive all the sciences from the science of matter in motion… to reduce sociology to psychology and psychology to physiology, thus paving the way for a complete reduction of social sciences to the physical sciences. [12]

Unfortunately, the positivist programme was in the first place a theory of natural science. If it did not hold there, it did not hold at all. With positivism being a variant of the philosophical theory of knowledge, Empiricism, it advocated a so-called unity-of-sciences. And this fact that pos itivism is no longer what it used to be has been stressed by Leo Straus, who wrote that Comte "had hoped that a social science modeled on modern natural science would be able to overcome the intellectual anarchy of modern society" [13]

We can see from the foregoing that the social science's attempt to ape the method of physical science has only meant shadow boxing with phantoms. And even Economics which is said to be fully developed as science – with its often quoted laws of demand and supply – cannot capture the kind of scientism which has been hoped for it. Human beings can still change their choices even when they have made demand for a certain supply.

As McMullin notes "the anxiety of the Vienna group to construct a clear line of demarcation between permitted and prohibited models of discourse betrayed them into what soon proved to be an over-simplified views of science".[14] We, therefore, see that the bogus claim of the social scientists, which is an off-shoot of the positivist "mind-set ", that they can derive, from purely physical science premises, arguments to buttress the fact that the mode of knowledge is or should be the same in both the physical and social sciences is not only spurious, it is equally vilifying, for man is not an inanimate matter, like the atom.

The natural sciences, therefore, appeared to have placed a seal on any and every attempt (and desire) to know, to acquire knowledge of the world, nature and the universe. But the goal of any philosophy of science w orth that name is to question this claim. Of course,

what we call "natural science" became the exclusive preserve of the western world, so much so that we could substitute the word "Natural" for "western" and argue that they are synonyms. The *Oxford Dictionary of Philosophy* captures the focus of a philosophy of science in a way that is relevant for our context! It is

> The investigation of questions that arise from reflection upon science and scientific practice. Such questions include: what distinguishes the methods of science? Is there a clear demarcation between sciences and other disciplines, and where do we place such enquiries as history, economics or sociology? Are scientific theories probable, or more in the nature of provisional conjectures? Can they be verified, or falsified? What distinguishes good from bad explanations? Might there be one unified science embracing all the special sciences? [15]

The logico-metaphysical concerns above were the focus of much of the 20th century discussion in the philosophy of science. But toward the end of the 20h century, and with the emergence of thinkers like Kuhn, Feyerabend, Quine, Hesse, etc, there is a tilt towards a more historical, contextual, sociological and even psychological approach the consensus s appears to be that there is nothing fundamentally sacrosanct about natural science, especially following emergence of quantum theory of max Planck (1858-1947).

The argument as to whether the empirical humanistic studies and Anthropology are sciences cannot be settled by simply saying "yes" or "No". The solution to the issue is more or less based on the definition of science that one gives, and as Morris Cohen and Ernest Nagel noted: "All the logical methods involved in proving the existence of laws are involved in establishing the truth of any historical event" [16], thereby making history a science as well.

The value question continued to cast aspersion on the desire to scientize social studies. According to Leo Straus,

> …the value judgments which are forbidden to enter through the front door of political science, sociology, and economics enter these disciplines through the back door; they come from the annex of present-day social science which is called psychopathology. Social scientists see themselves compelled to speak of unbalanced, neurotic, maladjusted people …the belief that scientific knowledge; i.e, the kind of knowledge possessed or aspired to by modern science, is the highest form of knowledge implies a depreciation of pre-scientific knowledge. [17]

Was it not Bertrand Russel that said that modern science that had been in existence for only about 300 years (then) can not claim to exercise hegemony over the entire gamut of knowledge of reality, for a world that has been in existence for millions of years?[18] All these occurred when science exalted facts, physical, empirical facts to the status of the only reality.

The rise of the empiricist mode of knowledge brought about and astronomical rise in the scientific interpretation of reality with its "cult of facts". However, it was the phil osophy of history that led the way for the challenge of this cult of facts, especially bearing in mind that positivism aped the physical sciences at inception. C.H Carr state this clearly when he discusses the idea of a science of history. According to him,

> The positivists, anxious to stake out their claim for history as a science, contributed the weight of their influence to this cult of facts. First, ascertain the facts, said the positivists, the draw your conclusions from them. In Great Britain, this view of history fitted in perfectly with the empiricist tradition which was the dominant train in British philosophy, from Locke to Bertrand Russell. The empiricist theory of knowledge presupposes a separation between subject and object. Facts, like sense impressions, impinge on the observer from outside and are independent of his consciousness. The process of reception is passive. Having received the data, he then acts on them [19]

A philosopher's interest thus, would be to question both the validity of the thorough-going, rigid distantiation between the subject and the object as well as the denial of the tag of "science" to social research activity such as history. The realization that the so-called "fact" which the historian tries to investi gate existed before him yet are being studies in the present gives credence to the claim by the Italian historian, Croc that "all history is contemporary history"[20]. The implication is that the historian does not just record, he evaluates since it is through the eyes of the present that the past can be seen.

5. Any Possibility of a Prescribed Methodology?

Besides, is it even possible to have a prescribed methodology which suffices all the sciences? The answer, of course, must be, No! And we try to give three reasons for our negative answer. F irst, during Newton's period, there was only one fully developed science – physics. But nowadays, the range of the meaning of science has been widened and solutions cannot be found by simple methodological prescription. Second, there is no straight road to the discovery of the truth and the various ramifications of reality. And such methods as John Stuat Mill's method of experimental enquiry, sometimes called a method of discovery, is merely a method of discovering causal connections not for the discovery of hypotheses. Mill's methods are five: The method of Agreement, the method of Difference, the Joint method of Agreement and Difference, the method of Concomitant Variation, and the method of Residue.[21] According to Russell, "there is one change from the Newtonian philosophy which must be mentioned, and that is the abandonment of absolute space and time"[22]. Third, scientific method has superceded the older Newtonian type. And this is the view of the anti-positivists, following the c ritical analysis of science offered by men like Henri Poincare and Ernest Mach. For Edward MacKinnon, there is a distinction between the content-centered and rule-centered interpretations of science, with the former stating that reality is intelligible and that science somehow reflects and reveals that intelligibility; and this is expressed in fundamental laws of nature. However, for MacKinnon, Ernest Mach, Poincare and Duhem's revolution in mathematics and physics as well as the rise of logica l positivism made this interpretation obsolete and morribund. Nonetheless, MacKinnon went on to argue that Rudolf Carnap, Carl Hempel and Israel Scheffler, in their logical analysis of formal systems embedded in an empiricist epistemology, can be seen as good examples of rule-centered interpretation in science. He, therefore, says that:

> Rather than simply accepting science as a set of systems requiring interpretation, one could begin by asking about the methods of interpretation actually operative in scientific practice, prior to any reinterpretation based on logical, epistemological, or metaphysical principles. This is not to say that such principles play no role in the construction of theories, but simply to indicate a different methodological ordering which may be of help in interpreting scientific systems. [23]

We noted earlier that postmodernists, such as Paul Feyerabend, rejected the distinction between the rules of discovery and principles of justification as two distinct concerns the discussion of method in science. And we now turn to the criticisms of positivism and science as a whole, in the next session.

6. Anti-Positivism, Relativism and Post-Modernism

Anti-positivism, relativism and post-modernism, though mean different things, the terms, in what they have come to represent, seem to have some things in common: a rejection of the so-called imposing image of sc ience, a vitiation of the arguments of positivists regarding the question of the unity-of-sciences, a rejection of the traditional quest for a foundational, permanent, neutral algorithm or meta-narrative which would ground all knowledge claims, amongst others. It is true that these movements seem to have appeared at different epochs (depending on the degree of the profundity of the human mind) their common goals made us want to discuss them under the same heading. Of course, anyone familiar wit h postmodernism would be aware that one of its fundamental features is relativism. And at the same time, we should not forget that the fundamental basis of modernity is "modern science". Consequently, a vote for postmodernism is certainly a vote against modernity and its science. For example, Henri Pioncare, reacting on Radium, the great revolutionary element that undermined the principle of the conservation of energy, wrote that:

> The collapse of traditional mechanics… led to the proposition th at science itself [in the physical sense] has also collapsed… Physics loses all educational values; the spirit of positive science which it represents becomes false and dangerous. One must, therefore, return to the subjective intuition, to a mystical sense of reality, in a word, to the mysterious, all that of which one thought it had been deprived. [24]

We noted earlier that during Newton's time, there was only one fully developed science – physics, and it was this physics that positivism wanted to f ollow in order to start a science of man. So, positivism must stand and fall with natural science. At the same time, Ernest Mach's[25] sensationalism with its emphasis on sense-data also stimulated a new interest in the nature of the empirical evidence on which science is based. Albert Einstein's theory of Relativity and developed quantum mechanics also precipitated a new crisis in physics in reaction against Newton's theory which recognized absolute space and time. The appearance of quantum me chanics ensured that *exactness* was traded for *approximates*. It was discovered that science is not as *exact* as it had claimed. The planets in the Solar System

do not move in exact ellipses as previously thought nor does any planet exactly repeat its orbit. These are the results of the discovery that the attraction of the planets usually perturbs themselves. No wonder Catherine Acholonu, in her book, *The Earth Unchained: A Quantum Leap in Consciousness* opines that quantum physics is "the ultimate closure of ranks between science and, religion, science and philosophy, education and mythology. It has provided scientific proofs to mythological and mystical claims held to be toboo by hard-line Newtonian science" [26]. This crisis generated the methodological doctrine of P.W. Bridgeman. Bridgeman formulated a theory known as Operationism or Operationalism, according to which the concepts employed in scientific theories must be defined in terms of actual operations carried out by the scientists in measuring their quantitative values. No wander MacKinnon says that "The primary task of a philosopher of science… is to explain – not the intelligibility of reality – but the logical forms which the mind of man creates and imposes upon a chaotic set of stimuli" [27]Also, recent developments in Cybernetics have shown that the traditional structure and method of science could not suffice the needs of contemporary science. Contemporary discussions on method have tended to pass through metaphysical and epistemological considerations. And so, in all these attempts at reformulation, we see that the so-called exclusivist hold on method is not even a historical fact let alone a fact of "reality". And so, it has been conceived that science should drop its hegemony on knowledge.

Thomas Kuhn, [28] a well-known philosopher of science, also reacted against the patterns of logicality imposed by the positivists on modes of validation in science. Kuhn, speaking both from the points of view of the history of science and the sociology of science, held that the positivists' modes of validation held only during periods of "normal" science, a period defined by the general acceptance of a paradigm or a disciplinary matrix, a model, a group of problem-solving method. These modes of validation do not and cannot hold during "revolutionary" science, when the matrix could no longer handle solutions successfully. For Kuhn, science is a work of a rather special social group and the adoption of a new paradigm is "a reconstruction of group commitments". [29]

On his part, Karl Popper criticized the verification emphasis of the positivists insisting that science does not follow the inductive but the deductive method of enquiry. He says that a good scientific theory must be "tested" by being falsified or at least being falsifiable. For him, "every genuine test of a theory is an attempt to falsify it, or refute it. Testability is falsifiability" [30] Popper argues that social science does not "predict" as natural science; adding that "the task of social sciences is to furnish us with long-term historical prophesies". [31] Popper attacked the Marxist scientific socialism as a "pseudo-science". He disagrees with Newton's claim that observation is the first method in scientific enquiry, insisting that the formulation of hypothesis is the first step in scientific methodology. However, the dispute between Newton and Popper, on the first step in scientific methodology, can not be easily settled. For, it is similar to the dispute between the chicken and the egg: which has ontological priority? Indeed, it would appear that an observation must be guided by a hypothesis (otherwise, one ends up looking for everythin g; and when you look for everything, you find nothing), while it also seems that no one could formulate a hypothesis who has not "observd" something!

By the time we arrive at the views of Paul Feyerabend, the critique of the Enlightenment project and the image of science reached a nth degree and with it a "Farewell To Reason".[32] Feyerabend says that the framework of scientific method can not be justified within the framework of cognitive epistemology. For him, "the idea of a science that proceeds by logically rigorous argumentation is nothing but a dream" .[33] Feyerabend had in an earlier work[34] denied that there is any one method which scientists ought to follow as a guide to theory choice. He went ahead to make the statement: "the only principle that does not inhibit progress: anything goes" [35] – which has been variously misinterpreted as "anything-goes relativism", and even "cognitive egalitarianism". [36]

It would appear as if we have been dealing with only methodological concerns in the physical sciences alone, i.e., in the philosophy of natural science. However, Peter Winch's book, *The Ideal of a Social Science and Its Relation To Philosophy*[37] and later Hans-George Gadamer's, *Truth and Method*[38] have been responsible for generating methodological concern in the social sciences. Following the later-Wittgenstein's abandonment of the essentialist notion of meaning, and the notion of a formal, logical language (in, *Philosophical Investigations*), Winch also jettisons the notion of a united formalist account of science which included the social sciences. He, therefore, goes ahead to separate the social sciences from the natural sciences by arguing that "subjective" interpretative elements are always present in sociology as well as in anthro pology; and so using a straight forward analytic argument, Winch finds his way to a hermeneutic-style understanding of the social sciences. For e.g, Winch, reacting to the controversy between himself and Alasdir MacIntyre, about E. Evans Pitchard's research concerning the Azande tribe of Africa says, that "oracles function for the Azande in much the same ways as mathematical calculations or clocks function in modern American society" [39]

It is, therefore, necessary to note that Winch's treatment of the social sciences is an attack on the direct opposition between epistemology and sociology which is usually located in traditional conception of epistemology; and this kind of attack., according to James Harris "lies at the very centre of philosophical hermeneutics" [40] We had earlier alluded to the fact that an after-Gettier conception of epistemology is precarious and so the post-modernist position is to shift from Epistemology to Hermeneutics. And this is particularly necessary for the questi on of the mode of knowledge in science and social science, for in philosophical hermeneutics, there is no absolute view point.

This is where Gadamer's *Truth and Method* becomes important, for he offers a serious philosophical critique of method and epistemology because of its claim to universality. For him, the problem of knowledge based on the model of natural science is that "it tolerates no restrictions to its claim to universality" [42] and this claim to universality has been called by Hesse "the imperialism of t he empiricist philosophy of science." [43] For these authors, therefore, method and its positor, the natural sciences, do not exhaust truth.

The central position of these post-modernists and relativists is that knowledge is broader than science because the latter is essentially "narrative" – appeals to a single, grand scheme which provides epistemological justification. It is this Gadamer's philosophical hermeneutics that Lyotard develops in what he calls "the post modern condition". And since science and philosophy (in this sense, epistemology) cannot develop themselves except through what he calls "some metadiscourse or grand narrative" ,[44] Lyotard says that "Post

modernism" means the abandonment of any attempt to arrive at a grand, universal, trans-cultural scheme for legitimizing knowledge, or to use his words; "postmodernism… is incredulity towards meta-narratives".

What postmodernist thus aspire for is the opening of the cultural space so that all modes of knowledge would participate. Although, science may have over thrown the essentialism of Platonism and Aristotlianism which tended to negatively cobweb society and all reality in an all embracing, uni versalist conceptual scheme. Yet, the postmodernists insist that the tag of "science" is historically, practically, methodologically, and consequentially not restricted to the natural sciences. "Experience" is not restricted to only sensual observables. There has been insistence, however, by some scholars that the empirical tilt of philosophy is still a blessing in our time, at least for delivering us from essentialism and universalism.

In a recent essay, Hossein Dabaggh and Soroush Dabbagh[45] have argued that if the feud between the rationalists and the empiricists did not achieve anything, at least it was instrumental in turning experience into an important pillar in the search for knowledge in the philosophies that postdated Rene Descartes. According to them, this focus on experience drove to the background the essentialism of Aristotelianism. They thus claim hat "philosophical thinking continues to flourish in the absence of realists thinking about universals and that philosophizing does not fundamentally rest on universals"[46]

7. Conclusion

The arguments of the antipositivists, relativists and postmodernists all condense in the fact that there is a multiplicity of ways of arriving at the truth and that the image of naturalscience as the only vehicle to knowledge has become both obsolete and moribund. But would we admit that this relativism is a correct interpretation of reality? Is it not paradoxical that the Enlightenment, which released man from the "veil of ignorance" and from the intellectually–castrating clutches of both religion and dogmatic metaphysical traditions, should produce a monster that later began to haunt it by way of these inconclastic criticisms? Does trying to pick-up the tattered flag of Modernity necessarily commit one – in one's epistemological and scientific views – to be insensitive to and intolerant of other cultures with new and different ideas? Can men like Rorty, despite their emphasis on "hermeneutic conversation" not be seen as appealing to or presupposing the same epistemological principles which they attack? These questions, and similar ones, should lurk behind the consciousness of any serious-minded and reflective reader of the works of the relativistic postmodernist authors. And James F. Harris, in his insightful work, *Against Relativism: A Philosophical Defense of Method*[47] has tried to provide answers to these kinds of questions in an attempt to defend both method and modernity. The question is, therefore, do we accept the totalitarianism of foundationlist science or should we go wi th the apparently well-intentioned, anarchical tilt of the, especially Feyerabend? It is the "devil's alternative". Whichever choice one makes, one is bound to give up something, but it does appear that there is no moderate totalitarianism as there is moderate relativism. Relativism does not have to be the radical type to be given a hearing. To that extent, therefore, I prefer the postmodern attitude to modern science. For science itself rests on presuppositions whose justification must be sought outside the scientific community and activity. They must be provided by philosophy.

Endnotes

[1]*Oxford Dictionary of Philosophy,* Simon Blackburn (ed.) (Oxford: Oxford University Press, 1996), p.294.

[2]Jurgen Harbermas, *Knowledge and Human Interest trans. By Jeremy J.* Shapiro, (Boston: Beacon Press, © 1972), p.67.

[3]Edmund Gettier, "Is Justified Time Belief Knowledge", *ANALYSIS* vol. 23, (1963), pp.121 – 123.

[4]W.V.O. Quine Word and Object (Massachusetts: MIT Press, 1960)

[5]W.H. Newton-Smith, *The Rationality of Science* (London: Routledge and Kegan Paul, 1981), p.1.

[6]Ernan McMullin, "Two Faces of Science ".in, The *Review of Metaphysics* vol. xxvii, No. 4, (1974), pp.671, 665.

[7]see Arthur Burtt The *Metaphysical Foundations of the Modern Science* (Mineola: Dover Publications Inc.. 2003) Chapter 7, for a relatively recent discussion of Newton's contributions to philosophy.

[8]Jerome R. Ravetz, *Scientific Knowledge and Its Social Problems* (Middlesex: Fenguin Uni. Books, 1973), p.146.

[9]Bertrand Russell, *History of Western Philosophy* (London: George Allen and Unwin Ltd, 1972), p.512.

[10]Edmund Husserl, *Phenomenology and the Crisis of philosophy* (Quentin Lauer New York: Harper Torch Books, 1965), *p.*71

[11]For a detailed study of the implication of the implication of the postmodernists' Views in science for Africa see Joseph N. Agbo, "The Postmodern Scientific Thoughts of Thomas Kuhn and Paul Feyerabend: Implications for Africa" *in Filosofia theoretical,* Vol. 3, No. 2 (December, 2014), pp. 9- 37

[12]See, Alan Ryan (ed.) *The Philosophy of Social Explanation, (*Oxford: Oxford University Press, 1982), pp.2,3.

[13]Leo Straus, *An Introduction to Political Philosophy* (Detroit: Wayne State University Press, 1989), p.13.

[14]Ernan McMullin, op. cit., p.658.

[15]Simon Blackburn (ed.) *Oxford Dictionary of Philosophy,* p. 343.

[16]Morris Cohen and Ernest Nagel, *An Introduction to Logic and Scientific Method* (London: Routledge and Kagan Paul, 1978), p.167.

[17]Straus, op. cit., p.19

[18]Bertrand Russell, History of Western Philosophy London: George Allen and Unwin Ltd., 1971, p.521.

[19]C. H. Carr, What is History? (London: Penguin Books, 1964) p. 9

[20]Ibid, p. 20

[21]John Staut Mill, *A System of Logic* (London: Longmans, Green, Reader Dyer, 1868), vols. 3 & 4.

[22]Russell, op. cit., p.525.

[23]Edward MacKinnon, "Epistemological Problems in the Philosophy of Science", in, *The Review of metaphysics* vol. xxii, No. 2 (Dec. 1968), p.345-6.

[24]Quoted in, V.I. Lenin, *Materialism And Epiriocriticism*(Perking: (trans.) Foreign Lang. Press, 1976). pp.305 – 306.

[25]Ernest Mach, The *Science of Mechanics*,trans. By T.J. McCornick (Illinois: Open Court Press, 1960).

[26]Catherine Acholonu, *The Earth Unchained: A Quantum Leap. In Consciousness*.(Abuja: Afa Publications, 1995), P. 26

[27]MacKinnon, *op. cit.*, p. 330.

[28]See, Thomas Kuhn, *The Structure of Scientific Revolutions*, (Chicago: Uni. Of Chicago Press, 1970).

[29]*Ibid.*, p. 181.

[30]Karl R. Popper, *Conjectures and Refutations* (London: Routledge and kegan Paul, 1963), p.36.

[31]Karl R. Popper, *The Open Society and its Enemies*, vol. 1, (London: Routlege and Kegan Paul, 1966), p.3. Popper also attacks Marxism and scientific social explanation in the 2nd volume of the *Open Societies* as well as in other works. See for, e.g., his, *The Poverty of Historicism* (New York: Basic Books, 1957).

[32]This is actually the title of one of his works. See, Paul Feyerabend, *Farwell To Reason* (New York: Verso Books, 1987).

[33]*Ibid.*. p.10.

[34]See, Paul Feyerabend, *Against Method*(London: New Left Books, 1975).

[35]*Ibid.*, p. 23.

[36]For example. P. Peerenboom, "Reasons, Rationales, and Relativisms: What's at Stake in the Conversation Over Scientific Rationality", *PHILOSOPHY TODAY*, vol. 34, Nos. 1/4 (1990), pp. 3 –19. Peerenboom's main thesis is to argue that the criticisms o f some fallibilist philosophers of science – Larry Laudan, Dudley Shapere, Imre Lakatos, Isreal Scheffler, etc – of the critics of the traditional Englightment Kantian quest for an account of rational theory choice which grounds the decision process in the "discovered" foundations of a permanent, neutral algorithm (men like, Quine, Kuhn, Hesse, Rorty, Feyerabend, etc) are "off-target", reductive and uncharitable. The former group accuses the latter group of "anything-goes relativism", "cognitiv e egalitarianism", "mob-psychology", "subjectivism" and "radical irrationality".

[37]Peter Winch, *The Idea of a Social Science and Its Relation To Philosophy* (London: Routledge and Kegan Paul, 1958).

[38]Hans-George Gadamer, *Truth and Method*(New York: Seabury Press, 1975).

[39]Winch made this claim in another paper titled, "Understanding a Primitive Society", in, Bryan Wilson (ed.) *RATIONALITY* (Oxford: Blackwell Books, 1970), pp. 93-94.

[40]James F. Harris, *Against Relativism: A Philosophical Defense of Method*(Illinois: Open Court, 1993), p.75.

[41]For more on the attempt made by postmodernism to clear the knowledge space occupied by Epistemology by positing Hermeneutics, see, Joseph N. Agbo, "Science and the 'End of Epistemology", in Martin F. Asiegbu and J. Chidozie Chukwuokolo (eds.), *Truth, Knowledge and Society* (Abakaliki: Pacts GM Press, 2012), pp. 138-156.

[42]Hans-George Gadamer. *Philosophical Hermeneutics*,trans. By David Linge (Berkeley:

University of California Press, 1976), p.54

[43]Mary Hesse, *Revolutions and Reconstructions in the Philosophy of Science* (Bloomington: Indiana University Press, 1980), p.169.

[44]Jean-Francios Lyotard, "The Postmodern Condition", in, *After Philosophy: End or Transformation*, (eds.) Kenneth Baynes, James Bohman and Thomas McCarthy (Cambridge: MIT Press, 1987), p.80.

[45]Hossein Dabbagh and Soroush, "Ontological Nominalism and Analytic and Analytic Philosophy: On the Philosophizing Whilst Dispensing With Universals", in *Philosopgy Study*. Vol. 5, No. (Feb. 2015), pp. 93-99.

[46] *Ibid.*, p. 93.

[47] Harris, *op. cit.*