

## THE PROBLEM OF SCIENTIFIC TRUTH (AN EPISTEMIC PERSPECTIVE)

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### ABSTRACT

*The aim of the paper is to show that, the hope we had and, some people still do have, that science will provide us the truth, concerning most important questions that are always bothering our minds, has now been transformed into a strong scepticism regarding the nature of science and scientific knowledge itself. In fact, the paper argues that science, instead of progressing towards the truth concerning reality, has taken the opposite direction and, deals with everyday mistakes it does. The number of mistakes, it does, are not just great but they are growing rapidly every day. This situation is keeping science busy with itself and does not leave room for it to deal with reality. Most of the scientific knowledge of one era becomes an illusion in the next one. Some of it may still be counted as knowledge but we are not sure whether it deserves to remain as such or, we still are unable to realize that, it is not more than an illusion. From the beginning of modern time till now the situation regarding our knowledge of reality has not improved in any important respect; in fact the situation is getting worse all the time. The process of learning and studying is not enlightening us at all about the true understanding of reality; on the contrary, it only strengthens our scepticism concerning the reliability of scientific claims.*

**Keywords:** scientific truth, reality, science,

### INTRODUCTION

The attempt to differentiate knowledge from what is not knowledge starts with Plato. This, in fact, was the purpose for introducing the word episteme. The problem was to distinguish between episteme (real knowledge) from doxa (dogma and opinion). Thus episteme, for its first time user, meant knowledge. Moreover, for Plato, every knowledge could not be classified as knowledge, but only that kind of knowledge which fits reality, consequently episteme meant “true knowledge”. Thus a claim to knowledge involves the truth of what is claimed, was the creed that ancient, medieval and modern philosophers and scientists held concerning knowledge. Although there are essential differences in the conception of reality among the epistemologists of positivistic and pre-positivistic period, as is the case with Plato and empiricists, they all assumed that true knowledge is that knowledge which fits reality. In this context episteme for Plato was as infallible as scientific knowledge for the modernists and the positivists. Another characteristic of knowledge, for this period, is its being considered as an objective conclusion. Thus objectivity and certainty were the necessary characteristics that a claim should possess in order to be counted as knowledge. The behaviour of modern mentality with science does not differ from the behaviour of religious mentality with religion. Modern mentality blindly believes in what is scientific and religious mentality blindly believes in what is religious. There is not difference

between science as it is comprehended by modern mind, and religion. Both are religions, in the sense that, both are indubitable foundations for their fancies.

### CONTEMPORARY CONCEPTION OF EPISTEME (SCIENTIFIC TRUTH)

Contemporary epistemology refutes the classical conception of knowledge as that which is based on some indubitable foundations. What remains unchanged about science and philosophy, in general, in contemporary thought, is their being the pursuit of truth. But, it is a fact that scientific conclusions regarding reality are no longer undisputed. They are always subject to conditions and, therefore, change. This means that the contemporary epistemic outlook, in science and decision-making process, has changed its presupposition. "Stability of knowledge can no longer be guaranteed".<sup>1</sup>

According to contemporary epistemologists, scientific knowledge is subject to change, not in the sense that it can no longer claim scientific status, but, in the sense that, even scientific knowledge is subject to flux and change. Thus absolute certainty is not necessary for knowledge. Knowledge, according to contemporary epistemologists, requires reasonable justification not absolute certainty.<sup>2</sup>

We will never be able to specify when a conclusion will be changed, or when it will be reasonable to doubt it in terms of knowledge about some sort of reality. But, the possibility of change must be granted. The obvious fact of this instability of scientific knowledge compelled the scientist to distinguish between reality and scientific conclusion, concerning the reality, or, between the truth that we try to understand and our understanding of it. An interesting explanation of these two kinds of truth we find in Herald Brown.<sup>3</sup>

He refers to the given, or the truth that we try to define as  $T_1$  and this represents, for him, the reality as it is, in itself. After his research concerning  $T_1$  the scientist comes to the conclusion equating it to Reality. This conclusion by the scientist, after its being accepted by the scientific community as such, represents scientific truth concerning the reality to which he refers to as  $T_2$ . Bases on this situation every scientific conclusion is  $T_2$ , because it contains in itself the possibility of being changed in the future.<sup>4</sup> It also should be added that Whitehead already warned, in 1925, about the absolutist claims of scientific conclusions. In his book *Science and the Modern World* he points to the "Illusion of Finality" among positivistic oriented scientists.  $T_2$  is equal to  $T_1$  if, and only if, we have the adequate expression of reality, about which we can never be sure. It is clear that scientific truth, in contemporary Western philosophy is based,

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<sup>1</sup> Feyerabend, Paul. *Philosophical Papers* (Cambridge: Cambridge University Press, 1981; 2: 71).

<sup>2</sup> Garrett Thompson. *An Introduction to Modern Philosophy* (San Francisco: Wadsworth Publishing Company, 1993); 17. John Dewey in his Gifford Lectures, *The Quest for Certainty*, (1928) made the point that even Descartes and his followers thought of scientific knowledge as something that is conducted in order to play it safe in terms of reality. They were searching in order to attain absolute secure knowledge.

<sup>3</sup> Harold Brown. *Perception Theory and Commitment*, (Chicago: Chicago University Press, 1977); 151-2. Again, the pioneering work and classic in the philosophy of science in its own right, E. A. Burt, *The Metaphysical Foundation of Modern Science* (New York: Anchor Book, 1923, and many reprints, thereafter, has shown convincingly, by using Newton as a case study, that science, indeed, operates on the basis of presuppositions. See R. G. Collingwood, *Essay on Metaphysics* (Oxford: Oxford University Press, 1958), who works out a metaphysics of presupposition.

<sup>4</sup> Stephen Toulmin is useful in dealing with this situation, see his two volumes, *Understanding* (Oxford University Press, 1975).

neither on indubitable foundation, nor on individual efforts.<sup>5</sup> Every conclusion made by any individual scientist in any field must be tested and consensus reached by the community of scientists in the respective fields, For as Brown claims:

*Scientific knowledge in any era is what the scientist actively takes as such, and the scientific knowledge of an era maybe rejected as error in the next. But the rejection of previously accepted claims will itself be made on the basis of the currently accepted views, which are themselves fallible.*<sup>6</sup>

It is clear by now that, contemporary conception of scientific knowledge, or episteme, defers from pre-positivistic and positivistic conception of knowledge in two important points: first, that scientific knowledge is an inter-subjective decision and, second, it is always subject to change. For "*There is always the possibility that new form of thought will arrange matters in a different way and will lead to a transformation even of the most immediate impressions we receive from the world.*"<sup>7</sup>

According to contemporary epistemologists the myth of objectivity and absolute certainty is replaced by intersubjectivity and scientific truth. Until recently, scientific knowledge was considered the infallible truth about the world. The priority of science to other kinds of inquiry consisted in its producing a verified or confirmed knowledge i.e. knowledge which is based on practical consequences. For contemporary epistemologists individual verification is not sufficient in assessing the truth of a scientific statement. Hence, a discovery can be called scientific, only if it is accepted by the consensus of the participants, or observes as such. In a scientific research, the individual scientist, observes particular facts of experience, collects these facts, and then comes with a conclusion about the observed facts. The conclusion drawn from the observations or experiments of these facts have to be confirmed and accepted by the consensus of other participations as well. Thus for postmodern epistemologists, the consensus of the participants is counted as the basis for every scientific inquiry. This gives scientific research the character of a team work. The work of the investigator in the scientific investigations consists in the interpretation of the collected facts, and in the fact that the discoverers give their reports as a result of their observations. For, as Feyerabend maintains, "*The history of science, after all, does not just consist of facts and conclusions drawn from facts. It also contains ideas, interpretations of facts, problems created by conflicting interpretations, mistakes, and so on.*"<sup>8</sup> Our knowledge of the world begins by the study of the appearances in it. The real world for us is our experience of these appearances. No individual decision about an appearance can be counted as true, until it is confirmed and accepted by the wider insight as such. With our ideas and opinions we try to formulate the real contents of our experience. This formulation of the individual observer of any field has to be confirmed and accepted as such by a group of observers of the same field in order to be counted a scientific truth. A true opinion can be counted as true, only if it expresses a view that is confirmed by the consensus of the participants. A false opinion, on the other hand, is the

<sup>5</sup> This conception of Truth, being part of the future, and, therefore subject to change is Peircean in character. See Nicholas Rescher's *Peirce's Scientific Method* (Pittsburgh: Pittsburgh University Press, 1985).

<sup>6</sup> Herald Brown. *Perception Theory and Commitment*, op. cit., 151.

<sup>7</sup> Feyerabend. *Philosophical Papers*, ibid., 71.

<sup>8</sup> Paul Feyerabend , *Against Method* ( New York :Verso, 1988 ), 11.

one that is not accepted as such by the wider insight. Scientific knowledge, for contemporary epistemologists, is fallible, and that which decides about the truth and falsity of such knowledge is again the consensus (community) of the researchers i.e., participants. There is no single idea that can represent the truth about a fact forever, because conditions making possible our decision about it are timeless. They are always subject to change. As a consequence scientific reality is also subject to change, not in the sense that it must be changed, but in the sense that it may be changed, and it will always depend upon the community of the investigators and what they will discover to be the case in the long run.

In the process of education the present generation is analyzing, criticizing and interpreting present knowledge to the new generations. This is what we do in our universities and other institutions of knowledge, whether the ideas accepted as true today will remain so in the next generation depends upon them. Therefore, future is a part of today's knowledge. It is mainly this process that gives scientific research an infinite character. We can offer no guarantee that truth, as we accept today, will remain the same in the future. It simply depends on the next generations and it remains to be their problem. Scientific decisions are subjective opinions accepted as such by other subjects in the fields, not necessary objective guidelines. Knowledge is a conclusion that has been acquired by human investigators. The final word about its truthfulness belongs to investigators i.e., subjects not to objective criteria.

*“...subjectivism signifies intercultural equality and respect. The world as it truly is (if indeed it may ever truly be said to be anything ) is made up of tremulous subjectivities; objective facts and generalizations are the expressions and tools of domination”<sup>9</sup> Contemporary epistemologists “...attack the long-standing belief in objectivity. Because it is impossible to build an argument or interpret an event or even gather data without a purpose and perspective, objectivity in the traditional sense becomes a myth. Something like objectivity may be attained; however, through intersubjectivity: that is an aggregation of interpretations from various perspectives may yield as nearly an unbiased picture as we can obtain.”<sup>10</sup> We must make the students aware that “we generally assume that the material we teach, if not actually verified as true, is at least accepted by a scholarly community as not false. We recognize that today's scientific knowledge may be falsified or revised in the future, but we do not intentionally transmit to our student's material that is false or misleading”<sup>11</sup>*

Thus for the contemporary epistemologists knowledge, in science and other fields, is an accepted, not a true, belief.

The myth of the certainty of knowledge has to be replaced by the requirement for its continual improvement and growth. Knowledge yielding procedure started with participation and its growth continued with additions, criticisms and changes done by the participants. In this context we must not forget that we as individuals belong to different national religious, cultural and ethnic groups. These differences represent a good basis for various approaches regarding

<sup>9</sup> Ernest Geller, Postmodernism Reason and Religion, (London: Routledge 1992) 26.

<sup>10</sup> Nel Noddings, Philosophy of Education, (Westview Press, 1998 ),73.

<sup>11</sup> Nel Noddings, op,cit, 111

knowledge. A variety of approaches lead to various views and various views lead to the growth of our knowledge, which represent the purpose of education regarding knowledge.

The claim in terms of the final understanding of reality means, basically, the end of wonder. It means the end of knowing, since it forces reality into a contradictory situation with what is going on in the real life. Observing human beings shows that, this species, is always eager to learn. From the newborn to the advanced mature humans, there is continual interest among individuals. Questioning, which is the starting point for learning, is a human permanent property and can never have final answers, it may have various and differentiated answers, but never final. However, our inability to pose further questions about a kind of reality does not mean that there are no further questions to be asked. In every scientific conclusion only a very small part of what it contains represents a new claim or new explanation, the rest of what the conclusion contains represents the justification of the appearance of the new claim which is constituted of the scientific weaknesses of the previous claims about the same problem. What separated Thales from modern physics is one oxygen atom, for, according to modern science; all substances are ultimately derived from hydrogen.

The greatest part of the justification of new claims is constituted from the correction of previous knowledge. Every reasonable claim in the field of science reflects the dogmatic character of one or some previous claims. What we call the growth of knowledge is not the accumulation of knowledge upon knowledge but the correction of the existing knowledge. So what is growing is not knowledge but our everyday awareness of the dogmatic sides of what we have considered as knowledge. Knowledge yielding procedure, as Popper says, is nothing more than “trial and error”. Every effective trial of today is, in essence, a very possible error of tomorrow. There is no reality outside there. What we call reality, which is surrounding us, is not an independent objective reality but a kind of reality that depends very much on us. Our surroundings are necessary for our living. Our ability to understand is the necessary spirit that keeps reality alive. We are those who have to play the role of giving continuous freshness to that reality with our process of understanding and this is what protects reality from death for, a dead reality, does not exist. If we accept and believe blindly with what is said than reality fades and, of course, dies. But the uninterrupted interpretation of every generation of it, keeps it always real, alive, interesting, and fresh. In fact, different interpretations of every generation of it reflect the infinite beauty and attractiveness of the same reality and the only way of the continuation of its existence. Our thoughts and interpretations constitute the necessary spirit that keeps reality alive.

All interpretations are possibilities, included in the same whole that we call reality, which in essence, are the building blocks and the necessary constituents of the same reality. *“Learning is not about once-and-for-all answers or exact repetition, but finding out about the variations that may or not lead to the same result”*.<sup>12</sup> We are not born to follow other people’s words and understandings but actively participate in the process of learning which is the only way of keeping reality fresh, real and alive. There is nothing around us which is not subject to our comprehension and understanding; it only depends on whether we decide to play our role which, of course, is a hard work, much harder than following the others. Only immature people continue to live under the pressure of the understandings of their elders. *“Thought leads to social systems, and nothing dictates the future as ruthlessly as an established thought infrastructure. The most*

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<sup>12</sup> Jonsson Bodil, Teen thoughts about time, London: Robinson, 2003, 22.

*effective way of chancing the future is to create a new system of thought*".<sup>13</sup> If we would be so brave as to doubt in Aristotle's sayings, before Copernicus, we would not lose 2000 years on the development of science. So that, we would be in much better position today, compared to where we are. If we would be so hard working as to more seriously analyse and suspiciously look at Darwinian evolution, right from the beginning, we would not lose more than one century transmitting Darwinism to new generations in our educational system as scientifically true, which in essence, is not more than a myth.<sup>14</sup> Any scientific decision considered as absolute certainty, as is the case with evolution more than 100 years, ceases to be a science, it becomes a dogma. And, "*When, furthermore, the cabal's views proceed to invade the educational system, becoming taught to large numbers of students, who, faced by the constant burden of difficult examinations, are not in a position to defend themselves, dogma becomes established*"<sup>15</sup>. The aim of teaching should be paving the way to students for critical and creative thinking which is a hard work and demands great efforts from academicians, of course, if they mind to be successful in this context. We cannot achieve this result by pushing pupils and students to constantly read what is in books and marking them based on how much they have memorized from what they have read, or based on the fitness of what they have written with our knowledge and what is in books. The business of scientific thinking is not to deal with what is written or what is been said, but to explore that which is not written and to bring in to existence that which is not said. This can only be done by new, fresh, dynamic and different interpretations of what is already old-fashioned. And the aim of learning should be, to benefit from what we read and hear in our way of thinking, not to become the slaves of what we read and hear. We cannot make progress in science by following methods and trying to fit our views to the existing paradigms of scientific knowledge. the aim of science is not to obtain reliable solutions that will be available forever. In fact the greatest tragedy to humanity is brought by the classical consideration of scientific conclusions as infallible, and scientific truth as universal and the only reliable truth. "*The attempt to enforce a universal truth (a universal way of finding truth) has led to disasters in the social domain and to empty formalisms combined with never-to-be fulfilled promises in the natural sciences.*"<sup>16</sup> Scientific reliability does not consist of our run towards some indubitable foundations on which we will fully trust, on the contrary, scientific reliability means a suspicious approach towards every solution. Scientific reliability is mainly constituted of individuals reliability to themselves, which is the necessary constituent of critical approach. The critical approach towards a solution is the only path that makes possible our participation in the knowledge yielding procedure. In fact the suspicious approach is the only necessary constituent of critical behaviour. The only reason why science deserves to be trusted, if it can be said that it deserves any trust, is because of its untrustable approach towards scientific claims. Our untrustable approach reflects our confidence in ourselves so that we can play our part in the process of our strive towards the better in knowledge. The main purpose of educators should be to raise human beings with confidence in themselves. If we brainwash our children with a baseless representations of science, as a ready-made packaged conclusion, to be known and

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<sup>13</sup> Ibid, 70.

<sup>14</sup> Vine Deloria Jr., *Evolution, Creationism, and Other Modern Myths*, ( Golden, Colorado: Fulcrum Publishing 2002).

<sup>15</sup> Fred Hoyle & Chandra Wickramasinghe, *Our Place in the Cosmos*, ( London: Phoenix 1996) 15.

<sup>16</sup> Paul Feyerabend, *Farewell to Reason*, ( New York: Verso 1987 ), 61

obeyed accordingly, the result will be a passive generation that will consider obedience a success. Our advancement towards a better way of knowing cannot be done with the guides and dictas of dead people. Of course we will know what was previously said about the matter but this knowing will be done with the purpose of judging, not with the purpose of obeying. The present knowledge is not an object for obedience it waits to be reshaped, restated or reproved. These are the activities that give scientific knowledge its fresh character. The authors and patrons of knowledge are generations (participans), they play and have to play with knowledge, everything they can, in order to achieve the better. Knowledge is not our master, we are the masters of knowledge.

Science, in positivistic sense, becomes our master that dictates us how to act and compels us to become its obedient slaves. Positivistic interpretation of scientific truth as objective and based on independent facts gave scientific knowledge the status of absolute truth. Thus, science as interpreted by positivists, loses its characteristics of being a science, it looks more like a religion. Moreover, for some decades science replaced religion in Europe. A well number of people behaved with science as believers do with revealed truth. *“The emotional energy we had once invested in religion as an absolute source of authority was uncritically transferred to science, which then became our guarantor of truth.”*<sup>17</sup> For those who consider science this way, religion also has to be subject to scientific criteria, i.e. objective and independent facts. Thus science, in the positivistic sense, was an invented religion, a religion that will serve as objective standard for testing all religions, and scientists its prophets. What seems strange in this issue is the fact that even though we all accept that science is a human activity, i.e. it is the achievement of the subject, or subjects, we still try to defend the existence of objective scientific criteria. Science is a human activity and consequently whatever affects the scientists will have an affect on science. The only way of progress is the replacement of authoritative knowledge with freedom of thinking, which is the only way for the continuous production of knowledge. Authority has no mercy; it uses every means, in order to destroy anyone who wants to stay in front of it. The case with the social scientists, that try to preserve the stability of existing knowledge, is no different. They do everything to preserve the existing, because, if otherwise, they will lose their authority in the field of knowledge. I think Feyerabend is absolutely right in his suggestion that, *“science’s social authority ...has now become so overpowering that political interference is necessary to restore a balanced development.”*<sup>18</sup> The concepts, like objectivity, stability, certainty, exactness, facticity have no positive contribution in the process of the development of knowledge, they are tricky inventions of the authorities that guarantee them the role of controllers of knowledge par excellence, so that, they remain in the domain of absolute knowledge. Objectivity, absolute certainty, exactness, patriotism, nationalism, national scientific institutions, are the band marks of closed societies. In an open society all these characteristics disappear. We must not forget that, *“Everything we experience as an object invokes a subjective response from us”*<sup>19</sup> Nature has no dogmas, but mysteries and complicated phenomena open to our understanding of them. There are no natural dogmas. Dogmas are artificial inventions that serve the authorities in their aims of

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<sup>17</sup> Vine Deloria Jr, *Evolution Creationism And Other Modern Myths*, (Colorado: Fulcrum Publishing 2002), 36

<sup>18</sup> Paul Feyerabend, *Against Method* (New York: Schocken Books, 1975), 216.

<sup>19</sup> Vine Deloria Jr., *Evolution, Creationism, and Other Modern Myths*, op. cit., 25.

dominating others. They are invented by authorities, because an authority remains an authority, until he convinces the others, about dogmas being, not a dogma but, reality. Our educational systems, press, media, government system most of the times, serve the authorities in this context. Every research activity, every scientific conference, every educational institution, is funded by somebody, be it government or private, with a purpose, and this purpose is not Aristotle's phantasm of "*knowledge for the sake of knowledge*" but "*knowledge for the sake of money*" or, profit in general, which are the necessary requirements for domination. We are all naturally born free. Freedom has to be the basis of every our action. We have to do all what we can in order to protect the safety of our freedom. The condition of not harming others is the building block of the safety of our freedom. Who knows how many thoughts and theories in the minds of many creative brains are cannot come into existence just because they do not fit the authoritative science of today. I think the fanatic behaviour of the scientists and their method of imposing and controlling the untouchablness and safeness of their views, which is our educational system, has blocked the way for the emergence of, who knows, how many, important and valuable ideas that, today, would speed our way towards the unknown.