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Futures' Methodologies as Scientific Tools for the Emergence of Humankind

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A rational basis can be found for dealing with the epistemology of the various futures' methodologies. According to "Conventionalism"—the modern school of philosophy of science, the main reason for preferring one science over another is its utility, rather than its authenticity. This means that according to "Conventionalism," which perceives the "utility" in the improvement of the psychic state and security of man as the main principle of any scientific thought, futures' methodologies, in their striving to achieve this end, is no less a "science" than any other science.

KEYWORDS: future, methodology, epistemology, science, systems theory

INTRODUCTION

Bechler (1985), Kuhn (1970) and other scholars of paradigmatology (Hesse, 1980; Feyerabend, 1981), claimed that the philosophy of any science is not engaged with the revelation of truth, certainly not with complete scientific truth. However, a modern philosophy of science, is engaged to present a science so as to abstract that science from the deficiency, which fuels its critics. The philosophy of science, Bechler argues, is aimed to present that imperfection by rationalizing that the concerned imperfection is "not existing" or, at least, is "not actual." Yet, if it still exists, it is considered to be possibly the core of that science itself, which is yet undetermined.

The advantage of such an apologetic explication (Bechler, 1985), is that the question of whether the science is a truth or not becomes irrelevant. From this point of view, the philosophy of science is

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similar to law practice more than it is to genuine experimentation. For example, the moment an attorney succeeds in his/her mission, it is useless to ask whether justice was done or whether indeed the client is innocent. Because, the duty of that lawyer was to present his client as innocent precisely from the aspect that the logic of the law determines the client as innocent. The crucial question is not whether or not the client is innocent, but whether he can be presented as innocent, to the extent that the presentation is acceptable.

Moreover, the reason the philosophers of science so often investigate on the "nature" and "essence" of the scientific action, can be seen as just a style of investigation, similar to the style of a lawyer who lectures to the jury about the "nature of man," the "nature of driving," the "essence" of the law, and the "definition" of justice. However, despite the style, the philosopher, as well as the lawyer, do not seem to investigate the real essence of the issue, but tend only to present one aspect of the issue as fundamental. In a sense, this presentation is a justified action, since there is no way to clarify whether that aspect is substantial indeed.

Thus, the actual explanation of such a philosophy of science, as Bechler has put it (Bechler, 1985), is that in order to understand any philosophy of science, we should first, comprehend the supposed deficiency of this science, which the philosophy is aimed to protect. It is possible, therefore, that different philosophies of a science may exist, in different times, since in general there can be different accusations regarding deficiencies in the scientific procedure. The philosophy of science labels the accusation a "problem" and its justification a "solution."

The core of the "problem," to my knowledge, of the epistemology of futures' research methodologies is its non-empirical nature. It seems to be that the futures' methodologies are not accepted by the "formulaic" science, from a socio-professional view point, because they tend not to base their inductions on the accepted empirical values of todays philosophy of science.

If indeed this is the "problem," I will try to clear from alleged fault the various futures' methodologies, precisely from the aspect by which the logic of modern Empiricism—Conventionalism—determines they are inadequate. I will achieve it by briefly describing landmarks in the development of modern Empiricism from its inception.

EMPIRICISM

The origin of modern Empiricism can be traced back to the early 17th century. Years later, Francis Bacon (1857) wrote about Empiricism to be as the "logic tool" on which scientific thoughts are established. Bacon followed up on the thoughts of Aristo, who nearly two thousand years earlier, pointed out the possibility of understanding about the essence of materials by conducting controlled experiments. The need for certainty brought Bacon, and the empiricists that followed him, to analyze the reasons of "uncertainty," which exist in all human branches of knowledge. They hoped that by revealing the roots of the uncertainty and the origin of dubiety in our knowledge, we would somehow overcome doubt.

This kind of inquiry on the origin of dubiety, in the human scientific framework became a traditional philosophy of Empiricism (Feyerabend, 1981), and part of the philosophical occupation in natural sciences, in accordance with Bacon's approach. The reason for inquiring about the dubiety was clear, since the knowledge acquired by the sciences should have been "certain" and "necessary," with no other possibility. In effect, the core of the Empiricism was to plot ways to combat the uncertain, and its purpose remained to establish ways to overcome the doubt and reach the certainty.

To reach that certainty, Bacon suggested a method that examines universal arguments, and enables us to refute them with contradictory examples. Bacon was speaking about "theses" and "informed guesses" regarding the structure of matter. This structure is currently labeled, the "atomic structure."

However, Bacon failed to solidify his argument since one could attack it by saying: if indeed the matter's structure is the subject of these presumptions, why should we assume there exists a finite number of possible suppositions, which may explain the phenomena? As one might see, we could continue to theorize, and the refutation process would never come to an end.

Bacon's failure derived from the model on which he based the physical world. Bechler termed this model as the "two tiers" or the "two levels" model. In this model, the first level of any phenomenon contains the essence of matters. The essence is the fundamental cause of the phenomena and nature's processes. The second level

consists of the phenomena themselves that are constructed on the first level. Yet, as for Bacon, the ability to control nature (purpose of science) will be possible only if we acknowledge the hidden reasons of the first tier; i.e., the lower level, the matter's essence, the hidden structure and the basic particles. Alternatively, in anthropological as well as social sciences, the purpose of controlling events will be possible only if we acknowledge the essence of the socio-processes and present behavior.

The apperception of hidden explanations, became a necessary condition, for controlling the phenomena and events, according to Bacon. However, this kind of knowledge fails epistemologically, because it is impossible to explicate the hidden reasons. We would never be able to recognize them with certainty. Our knowledge would always remain doubtful without opportunity to replace it with another assumption, that would fit the phenomena like, if not better than, the previous assumption. Thus, such suppositions would not be, what so ever "certain," since "certainty" means there is no other existing possibility.

It is my understanding that the basis of the "problem," which faces the futures' methodologies, is the fact that the empiricistic concepts are still deeply rooted in the minds and hearts of our society. Although the empiricism's failure is clear, it remains active in generating doubts about the techniques that aim to anticipate and invent the future's trends. Professionals, as well as laymen, perceive social methodologies, in general, and futures' methodologies, in particular, as "experiments" that cannot be refuted by contradicory examples, therefore are not considered as "scientific" techniques at all.

As I have noted above, Bacon's Empiricism and its deriving knowledge are not included anymore in the valid philosophy of sciences. The reason for this is that it is impossible to acquire certainty and necessity of the reasons.

CONVENTIONALISM

What is of particular interest to us here is that seventy years after Bacon presented his theory, a scholar by the name of Newton (Cohen, 1978) declared that he found a partial solution to Bacon's "problem."

Newton declared that he found an avenue to cross the road from the "phenomena" to the reasons"; from the "second level" to the "first level." Together with two theories he invented in physics—the "optic" and "mechanics" theories, he also drafted the empiricistic philosophy of science, which endured two hundred years up to the late 19th century.

Newton's theory of physics started collapsing around the beginning of the twentieth century. At that time new philosophies of sciences arose, pointing to different solutions. One of the solutions raised the idea that science is not intended to address a "two tiered" world, but a single level world. This solution claimed that there is only one level of existence. In other words, the idea was that there are no hidden reasons to the phenomena. Yet, if indeed, there exist hidden reasons; these are of no interest to science. This solution took two separate pathways. The first implied that causal link is not different from the successive link. That is to say, that there is no difference between the description of a phenomenon with words such as "this happened because of that," and a description such as "this happened after that." In effect, this solution denied the possibility of explaining anything, since it dismisses any meaning for the word "reason." The school that developed this type of solution was named "Phenomenalism." The origin of this name can be accorded to the role this school assigned to science, which is to reveal and arrange phenomena in time and space (Stace, 1940; Farber, 1928). Following this way of thinking, the futurist can engage techniques such as "extrapolations" and remain within the scientific framework.

Another solution implied that causal link is a fundamental link in science, since there is no science without the probe of reasons. The followers of this attitude claimed that although the nature of science is to explicate, nonetheless they denied that "cause" and "result" are separate entities. They argued that these two entities are basically one, yet one is former to the other and separated from it in space. This pathway model was named "Conventionalism." It was based on Aristo's theory that suggested one should perceive causal links as "logical links" (the most known of Aristo's logical-links is the *syllogism*). Conventionalism has emerged from his "grouping's laws." Aristo argued that there are "natural groupings" (links) and "artificial groupings," yet only the natural links are objective and considered as

scientific reasons. Whereas the conventionalism contended that there is no possibility to show objectively which is a natural group or an artificial group. For example, in looking for the characteristics of a "triangle" we might think this way: if we group triangles together with tables, liquids, and digital watches, we might say that their common characteristic is that they do not bark. It will remain that one of the essential characteristics of the triangle is that it does not bark! One cannot escape from accepting that there are harmless artificial ways of grouping things, since it is possible (if not reasonable) to say that the fact a triangle does not bark is one of its natural characteristics.

It appears reasonable to speculate that the difference between the Aristotle philosophy and Conventionalism can be pinpointed to Aristo's understanding that there is an objective significance to the natural grouping, whereas, Conventionalism contends that such a statement cannot even be defended. Conventionalism, therefore, holds on the concept that all definitions are similarly artificial, and in effect there are no natural and objective groupings of things.

According to Conventionalism, thus, the situation is as follows: the essence of a phenomenon is the result of the abstraction from a purposeful grouping. Yet, all types of purposes are legitimate. The principle of one grouping might be preferable over another simply because today's tradition prefers it, and it might be preferred only because it is fulfilling a certain need—a need that no other groupings fulfill. Therefore, if we have other needs, we may prefer another tradition with different grouping principles. Thus, the definitions could have been different, and explication to phenomena would have been also different. The whole science would have been different. Thus, according to this concept, the important factor that determines the grouping's principle is the "tradition" or the "convention," which is also the origin of the name "Conventionalism."

The Conventionalist may formulate his/her stance with the word "arbitrariness," and claim that every definition is but arbitrary to the extent of any other possible definition. The intention here is only to emphasize the rejection of the concept of natural grouping. However, there is no intention to say that the definitions are either useless or the fruits of illusions and hallucinations. On the contrary, the Conventionalist will retain and prefer one grouping over another based on its success to reach its objective, since he claims that the

groupings and the definitions are always made precisely to fulfill a specific need (Commoner, 1963). The Conventionalist believes in these definitions because they are rational. He believes in the tradition's rationale and the rationale of the society in which he lives.

It is necessary to clarify this point, since we would like to draw from it an analogy to the rational validity of the various futures' research methodologies. The word "arbitrariness" usually is loaded with criticism. In our daily language we mostly use this concept in a negative interpretation. We use it mostly to express criticism against irrational or inconsistent actions. We usually do not justify arbitrary actions. On the contrary, we praise actions that we regard as wise actions that are not arbitrary. However, there are some situations in which the only wise action that we can take can be categorized as somewhat senseless, and its reasoning as clearly irrational. The classic example to this situation is the rational donkey that starved to death while standing in between two hay piles, refusing to prefer one upon the other without having ample reason for its preference. In contrast, by taking an arbitrary action it could have been considered acting as a rational creature. Yet, the Conventionalist would justify this action as both, rational and arbitrary, since it helped its survival.

Our conceptual systems have specific functions in our daily life. There are specific functions to our scientific concepts, to the spiritual, religious, and moral concepts, as well as to the methodologies that help us think about the future. Our rationalism depends on the success and usefulness of these concepts. According to the Conventionalist, our preference of one science over another does not derive from the fact whether that science is authentic or false. However, the principle that determines its preference is its utilities. That is to say, that the preferable utilities of science are the ones that determine the history of that science, not its "authentic conceptual system."

It is most important to clarify that the word "utility" is in use here in its broad sense. The intention is not to refer to technological utility, such as improving a brand of refrigerators. Rather, this term addresses the extent of conceptual utility, such as the utility of improving the humankind state of mind and safety.

Therefore, if in fact, the Conventionalist favors a science not based on its authenticity, a rational basis can be found for dealing with the epistemology of the various futures' methodologies. From that aspect,

the future oriented thinking is as "authentic" as any other scientific concept is authentic to its era. All the more so, in regard to the logic of the scientific philosophy of the Conventionalist, who perceives the principle of its scientific action as its *utility*, the future-oriented thinking not at all falls from the utility of any other science.

Hence, we can clear the future-oriented thinking from "accusation" by restating Bechler's explanation of the nature of conventionalism. Bechler (1985, 46) perceives the nature of Conventionalism as a "relativity theory" by which any conceptual system is relatively authentic to its definitions. Therefore, to the extent that future's methodologies are determined by their utility their problem is diminished in importance. Of greater importance, however, is their "problem" from the historic and socio-professional point of view.

As I have cleared their problem from the philosophical point of view, I will further engage to clear the problem from the paradigmatology point of view.

PARADIGMATOLOGY

As we know, investigation into the history of sciences began only after World War II. It seems to be that the catalyst for this new occupation was the shock that democratic societies experienced in realizing the role the sciences took in the war machine. Until then, society used to describe the story of the history of science as successful and glory in all means. Society used to tell about great scholars that fought against prejudices, churches and ignorance. In this scheme, scientists were described as people who fought in the name of the intelligence, the inductive logic, the exquisite experiment, and revealed repeatedly the truth of reality. The scientific progress was always described with one style: from the limited to the universal law; from the less accurate (it was not less "mistaken" but less "accurate") to the precise; from the genuine to the more genuine. According to this picture, "science" was the fine honey in the Garden of Eden of rationality. However, after the explosion of the first atomic bomb, the sweetness of that scientific Garden of Eden started evaporating. Young people who approached science and its history, tended to look for its mortality, for its perspiration and tears, for the fragmented breath

of a mortal creature wandering, grabbing in the dark, and revealing things in absent-mindedness.

At that time, Arthur Koestler (1959) wrote a book about the birth of science in the 16th and 17th century. He named the book, in which he described the works of Copernicus, Kepler, and Galilee—"*The Sleepwalkers*." The book symbolized a new era in writing about the history of science. One of the first things that were clarified in the historical sort of investigation was that the Empiricistic philosophies (such as of Karl Popper (1959), which aim was to explain how does the science progress without being able to ascertain universal laws), are progressing not by ascertaining universal laws, but by refuting false laws. Koestler suggested that this kind of philosophy is no longer relevant to the story of history. Scientists apparently did not tend to engage in refutations. On the contrary, they seemed to make efforts simply to justify their theories. Moreover, according to Koestler, they tended to deny, curiously, refutations while they occurred. No wonder, he explained, why discussions that took place between scientists were as debates of deaf people, while the "enlightened criticism" which Popper (1956) was speaking about consistently fell on deaf ears of other scientists.

Moreover, Koestler claimed, prejudices and blind objections to science, were most often expressed, in science's history, by people from institutes of science more than from outside institutes of science, such as the church. Therefore, the "rational" picture in which science was previously painted, became increasingly fuzzy. At that point, an apologetic explication to such attack on science was needed.

Indeed, Thomas Kuhn (1970) addressed an apologetic philosophy to the historical development to science. Kuhn was the first to organize the structure of scientific revolutions in the domain of natural sciences. In describing some of the concepts of Kuhn, I will try to address the debate of how well the socio-professional epistemology of futures' methodologies competes with paradigmatology.

Kuhn's suggestions on the operation's nature of the "standardized science" were broadly accepted by scholars with only few restrictions (Doppelt, 1978; Gutting, 1980). According to Kuhn (1970) in a standardized science, research is based clearly on another science's achievements, such as past achievements, which the scientific community approved as the providers of its basic continuous action.

Kuhn named these achievements "paradigms." This suggests that some of the accepted practical scientific exemplars, such as models, theories, and applications do provide models from which cohesive scientific traditions arise.

In the first two chapters of his book, Kuhn explained that the basis of the historiographic attack on science was provided by the philosophy of Popper. No mortal creature can reconcile with the demands of such a philosophy, contended Kuhn. There is no possibility that scientists will be able to follow-up the instructions that the philosophy of Popper assigned. According to such a requisition, a theory should clear its way to another theory the moment it is refuted, either by an experiment or by a fact. However, if we force theories to disappear when any refutation occurs, contended Kuhn, we will be required to replace all existing theories without the possibility of retention. The reason is that, usually, only few cleared facts correspond to the theory in the revelation of a scientific theory. Most of the facts that the theory is aimed to clarify are either strange or do not fit with the theory itself. Kuhn (1970) claimed that careful historic investigation about any specific expertise of a specific era, can reveal a group of widespread demonstrations and quasi-standard different theories, which are the paradigms of that community, as they are exposed in its books, lectures and laboratories. That is to say, any kind of research in the history of science will indicate that theories that appeared in sciences, from Aristo through Copernicus, Galilee, Kepler, Newton to Maxwell and Einstein, did not explain all the facts they were supposed to clarify and were always refuted, from their inceptions, by many of the already-known facts.

No scientist could have acted to improve and develop the scientific creation without denying the contradicting facts and stay close to his theory, in order to continue, after all, improving the model to fit the facts. The futures' methodologies can be rationalized based upon the principles developed in Kuhn's paradigmatology. Indeed, the futures' methodologies are quasi-standard, and their applicable observations do not always fit and clarify the facts that have formed, at last. However, this is exactly the nature of any theory. A theory needs scientists to engage in its improvement consistently over time, in order to obtain its maximum. It appears reasonable to assume, therefore, that futures' methodologies are engaged with the similar processes and actions, with which all other methodologies are engaged.

Moreover, according to Kuhn (1970), in the long and short run, it is very important to treat the scientific theory as we treat a religious dogma, or a principle of faith: we ought not to abuse and put them to decisive tests. A dogma is not a principle that we should validate, he says. On the contrary, it is a principle with which we verify other things. Thus, a theory should be used as a dogma, for a while at least, to enable its model to demonstrate its ability to organize the phenomena. Bechler (1985) explained that Kuhn based his argument on the "Conventionalist" idea; on the weak and unstable link between the theory and its phenomena. Kuhn used another firm Conventionalist argument, which is the "circulativity" of the theory. The circulativity argument suggests that a theory not only cannot be refuted by facts, but also cannot interact with other competitive theories. This explains why the arguments in the history of science, discussed earlier, are poor.

The underlying theme of this essay demonstrates that based on the historical development of science, it is reasonable to argue that the future-oriented thinking, including its concepts, definitions and methodologies, is but another "dogma"; a dogma that can be logically justified by its very nature to aid in our survival. Yet, although its techniques are "arbitrary," we should not be concerned about this arbitrariness, as the history of science is not. Therefore, we should not accuse the future-oriented thinking of being arbitrary because it is not utopic, as we should not deny the practical science of arbitrariness. By contrast, we should change the standards with which we measure the rationale of the scientific action. These standards will aid us in clarifying the science, in general, and the futures' methodologies, in particular, as positively rational actions (Doppelt, 1978).

A MANIFESTO

From a different perspective, new manifests are being discussed for new sciences (Bohm and Peat, 1987; Mitroff and Churchman, 1992). Bohm and Peat (1987) suggests that the increasing fragmentation and specialization of science has lead to "the point where the whole activity is losing its meaning." Therefore, he says: "we need to change what we mean by science," and bring about basic changes that "would represent a significant move toward liberating the surge of creativity that is needed if science is to help in confronting the deeper problems of humanity."

We find Bohm's theme of calling for a new science powerfully articulated in Mitroff's and Churchman's recent "Manifesto for the Systems Science: An Outrage Over the State of Science (1992). They provide definitions and concepts of science that are very different from the prevailing tradition. They believe that the institution of science should "exist primarily to serve humanity, and not the narrow specialized interests of disciplines; any science or discipline that loses sight of this fundamental principle not only forfeits its legitimacy, but its basic right to existence." Here are a few main points of their manifesto:

- Theoretical propositions no matter how well they are confirmed by research do not necessarily lead to or produce sound actions (#9).
- With very, very few exceptions, virtually all theoretical findings fail to produce actions because they do not tell users how to implement them, or they do not motivate or persuade users to apply such findings (#10).
- One of the major hallmarks of the current research community is the overwhelming belief that the theoretical understanding of an important social problem is independent of our understanding of how to implement the appropriate actions necessary to change the initial problem (#11).
- Thus, even "action research" often fails to produce results which meaningfully improve human action (#12).
- The key word is "improve" (#13).
- By "improve," we mean actions which are ethically sound, not necessarily scientifically or theoretically (#14).
- In short, study of the interactions between world problems and the implementation of solutions is the most fundamental problem of the systems sciences (#35).

SUMMARY

Standing on the shoulders of the founding fathers of the systems movement, the futures' methodologies are a response to this "manifesto" of Systems Service. It is our belief sustained by the paradigmatology (Gutting, 1980) that scientific activity does not

derive from absolute rational values. Its stimuli are neither truth, simplicity nor punctuality. However, the scientific activity's purpose is but the survival, and the psychic's, as well as the physical hygienic of humankind. To the same extent, we may conclude, the future-oriented thinking is a rational and existential human activity that can debate very well with any other set of scientific paradigms.

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