

Popper epistemology and management as an applied social science: A theoretical essay

Epistemología de Popper y la administración como una ciencia social aplicada: un ensayo teórico

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ABSTRACT:

The objective of this essay is to discuss the main arguments of Popper's epistemology and its implications in management as an applied social science. Based on the definitions and concepts of the management area, this paper proposes to analyze the epistemological criteria for the management and its object of analysis by taking into consideration some important questions about until what point scholars can consider whether or not the management as a science and what rules that determine its boundaries. Despite the importance of the management as an object of study for many great universities, research programs and scholars, those limits, by looking through the Popper's perspective, remain unclear. Regarding the importance of discussions around the management epistemology and the scientific procedures in management research, by the view of Karl Popper, academics and scholars must suppress all formalities of science to a broader both conscious and calculated understanding of their work. The main conclusion of this paper leads to a contribution and evolution to the research process in management, where the role of the researcher should be better

RESUMO:

El objetivo de este ensayo es discutir los argumentos principales de la epistemología de Popper y sus implicaciones en la gerencia como una ciencia social aplicada. Basado en las definiciones y conceptos del área de gestión, este trabajo se propone analizar los criterios epistemológicos de la administración y su objeto de análisis teniendo en cuenta algunas importantes preguntas acerca de hasta qué punto los eruditos pueden considerar o no la gestión como ciencia y que reglas determinan sus límites. A pesar de la importancia de la gestión como objeto de estudio para muchas grandes universidades, programas de investigación y académicos, esos límites, mirando a través de la perspectiva de Popper, siguen siendo confusas. Con respecto a la importancia de las discusiones alrededor de la epistemología de la gestión y los procedimientos científicos en la investigación de la administración, por la visión de Karl Popper, académicos y estudiosos deben suprimir todas las formalidades de la ciencia a un más amplio tanto consciente y calculan la comprensión de su trabajo. La principal conclusión de este trabajo conduce a un aporte y evolución para el

understood and defined. Another contribution indicates the development and appliance of research techniques and development of critical thinking which are entirely necessary to do scientific research under Popper's perspective.

Keywords: Research Methods; Administration; Science Boundaries; Scientific Research

proceso de investigación en gestión, donde el rol del investigador debe ser mejor entendido y definido. Otra contribución indica el desarrollo y aplicación de técnicas de investigación y desarrollo del pensamiento crítico que son totalmente necesarias para hacer investigación científica bajo la perspectiva de Popper.

Palabras clave: Métodos de investigación; Administración; Límites de la ciencia; Investigación científica

1. Introduction

This essay presents the theoretical epistemology of the Emeritus Professor of the London School of Economics and Political Science – LSE, Karl Popper to establish relationships between management and the main theories and assumptions brought by him to improve the theoretical contribution using an empirical verification of the elements which contribute to its consolidation as a proper science field.

The intent is to expand the overview and the interpretation of the theoretical tests, allowing the correct questioning to establish more comprehensive discussion points regarding management as social applied science.

It becomes necessary to sway management by the use of reflection instead of beliefs and established concepts taken as truth by scholars. In a theoretical test, the main feature is the possibility of a deeper and more comprehensive reflection on a particular perspective not limited just to a formalized structure of analysis, so necessary nowadays due to the increasing of studies and publications about this important topic.

Under this framework, some question should be done a priori: What is epistemology? Why do scholars need to do epistemology? What are the elements involved in this matter that deserve importance?

These doubts are presented to establish flexibility which this concept offers in an "embedded discussion environment." It is important to reinforce that the interpretation by academics and scholars to the term "epistemology" cannot and nor should establish dogmas to researchers and scientists, the point is not to impose authority over what should or should not be a scientific knowledge, but rather study the origin and configuration of scientific knowledge (Japiassu, 1977).

2. Theoretical Framework

Popper (1959, 1973) emphasized the rejection of classical empiricism and inductivism by explaining that both are results of the fact that a scientific theory is always provisional, and the traditional epistemology focuses its efforts on knowledge or subjective thought, which are sometimes irrelevant and meaningless.

The same author also divides the world around us into three different perspectives: the first is the place of physical events, where all things are materials; the second treats the mental events which regard the processes of human consciousness and the brain state; the third world which is the product of the human mind, including the intellectual and human achievement records.

The author proposes the consciousness of ourselves depends entirely to the inhabitants of the third world, because the animals, despite their feelings, sensation, and memory, or in other words, consciousness, is not able to have consciousness of own selves (Hiller & Allgayer, 2014, p. 192).

Therefore, in the light of the theory of Popper, scholars can observe the importance of epistemological surveillance, by relating it to the so-called third world, where problems and objective knowledge facing each other (Popper, 1973). By surrounding themselves of

procedures and science patterns, scholars should not escape from reason and reflection, and the willingness to criticize, recanting and contrasting shall prevail.

Complementarily, researchers should not be only a problem solver, but someone engaged to perform tests for the search of truth and whom to put a theory for criticism and exposure.

In his work "*Logik der Forschung. Zur Erkenntnistheorie der modernen Naturwissenschaft*" or *The Logic of Scientific Discovery* from 1934; Karl Popper explains that an error cannot be considered a bad result in scientific theory, but a breakthrough and part of any process of investigation. He also criticizes roughly the inductivism in the academy, whereas the evolution of science occurs through a powerful critique of the postulates and theories presented.

He also affirms that all part of an initial problem should generate a research for the most suitable solution and available, at that time, and insert thus a hypothetical solution in an attempt to solve the presented problem through a new theory.

Then, new implications coming from this effort will generate other problems, making knowledge building an ongoing and gradual process. According to Popper, accept the ignorance as the cornerstone for scientific development is essential to face the actual and complex world we live. Thus, the contribution of the Popper's studies refers to the progress and the development of scientific knowledge which emerges in an attempt to re-establish a robust scenario, where the prevailing theory can no longer sustain itself.

Contradicting other theorists such as Thomas Kuhn (1970) and Imre Lakatos (1976), Popper (1959, 1973) argues that the higher the degree of submission of a theory falsifiability, higher is the contribution to the progress of scientific knowledge. The possibility of new incursions and critical exposures to the truth probation, if it exists as claimed by Popper, involves disposing of any judgment or preconceived ideas. His conclusions propose a real change in scientific consciousness, and even into the unconscious level, to understand and discuss the methods of science.

About epistemological concepts, the characteristic of Popper ideas lies on his striking opposition to the trends of positivist philosophy and language philosophy. Despite this, he still cared about the elucidation of the value of scientific theories, by referring to the degree of confidence in the methods, on the data acquired and on the analysis made by the researchers.

Regarding the conceptualist epistemology, where is a return of the sensible experience, Popper proposes the understanding that the primary return to obtain the knowledge contents, called perceptual data, which already absorbs the substance of meaning, brought as a reflection an updated interpretation of empiricism principle called neo-positivism.

The French philosopher and poet Gaston Bachelard (2002), expounds the so-called "new scientific spirit" as a discontinuity or distinction, breaking through the common sense of things. In this new perspective on science, disrupting the universe of opinions and pre-concepts ideas, ultimately, the common sense and the scientific world, which was, hitherto the imperceptibly scientific world.

Bachelard (2002) also pointed that the scientist gets closer the studied object in the new science not more through methods based on senses or shared experience, but above all, by the theory and experimentation. It means that the scientific method is no longer straight or immediatist, but collateral, being mediated more by reason. Bachelard most significant mark, between the sciences before the 20th century, was the overcoming of the empiricism by the rationalism.

Based on the arguments presented here, a larger breadth of knowledge and research is needed in the applied social sciences, in this case, the management. This discussion is always beneficial to understand better the management under this perspective, not only as a practice but rather as a way towards new tests and presentations of theoretical models to criticism.

In the organizational level, a lot of what is presented are management models, showing the superiority of instrumental rationality and the organization mindset for decision-making.

Organizations are complex and morphic according to the environment, and their survival is the result of its strategy, discipline, and loyalty to their purposes and their commitment go far beyond their shareholders.

The study of organizations and the formulation of policies has grown a lot in recent decades, mainly due to the structuralist and behavioral approaches, which integrate the context of external variables into the internal sphere organizations.

The growth of the social sciences in the USA, and, particularly, for sociological and psychological studies related to the behavior of individuals in organizations, had as a result the increasing emphasis on the human relations approach (where assigned status to aspects such as motivation, enthusiasm, and ties in the different working groups).

Thus, understanding the process of elaboration of strategies and people management in organizations becomes critical to a better evaluation of the results of scientific researches in management and underlying areas.

3. Epistemological Elements of Popper

Japiassu (1977, p. 24) and Meneguetti (2011, p. 321) conceptualized epistemology as "speech on what the primal statement of science should be reflected." Also, he states that the epistemology has the function to solve general problems involving the relationship between the philosophy and the sciences. This is nothing more than a speech for search the truth of a problem, raise questions about what scientific truth is in what conditions the facts corroborate this truth.

The epistemology of Popper (1959) becomes the theory of scientific knowledge based on criteria of objectivity, with objective problems, and objective arguments. In his studies, Popper presents the traditional critique of the epistemological model that he considers as subjective and irrelevant to the advancement of science.

Regarding objectivity, he states that only from the public exposure of a theory, the researcher reaches the objectivity of the concepts or by discussion, either by the debate of ideas, bring a new look disengaged of beliefs or pre-concepts rooted in a particular scientific community.

The Popperian epistemology also exposes the theories to new advances putting them in place and testing until their exhaustion, with this procedure, ideas become more realistic even if conflicting with others theories.

He pointed out that it does not exclude the metaphysics definitively from the research, but rather, through a system of statements, scholars can decide if a deeper study may or may not be placed in an empirical science context, culminating in the establishment of the falsifiability criteria as the demarcation of science.

This essay not intended to discuss the fact that the researcher is involved with their interests, with the lessons learned over time and this relationship, or with her understanding of what is a theory, it is inherent to the human being make their choices according to their beliefs, values, traditions, customs, ethical issues or simply by the way you see the world in which he lives.

Nevertheless, from these choices there are the expectation for results and significant changes in their midst, and under the epistemological perspective of Popper, management scholars must be aware of the essentiality of the questioning, rebutting, and also modifying what had been considered as true, clarifying that there is no neutral observation and all built knowledge is full of theory.

Regarding contemporary epistemology, it is essential to the understanding of the criteria of the so-called scientific knowledge. Among leading authors, Gaston Bachelard (2002), exposed that scientific knowledge is true when a particular individual experiences everything around it intensely. He stresses the importance of rethinking the different concepts, breaking with current thoughts and methodologies so that epistemology can allow the progressive and cumulative advancement of knowledge.

Another important aspect highlighted by Bachelard (2002) and a point in common with the Popper, is the aversion to dogmatism, and at this point, science can only approach the truth, but never be the truth.

About knowledge advancement, Bachelard (2002) makes a caveat by explaining that in the case provide it some intelligibility it is essential that the rational reflection is regressive, i.e. to understand is a science of the past, you must go to the past.

This point of view posits against the positivism of Augusto Comte (1798-1857). The Bachelardian contribution to the humanities inspires intensely the interest to the logic of scientific discovery, characterized by the controversy of truth against error and by repeated effort to submit these facts to a permanent correction.

About the falsifiability, Popper believes that scientific knowledge is a result of its methods, ability to expose facts, criticize and test the supposed theory until its exhaustion. This criticism is that same perspective that the absence of contestation and criticism does not provide the progress of science, so counteract arguments are essential to the development of new ideas and to change current perspectives.

By the usage of the Popper's view, scholars developed a method of situational analysis which considers, for example, the economy as a standard model. From this point of view, people are no longer motivated to pursue their wishes, but they seek targets conditioned to some situation. Within this logic, economy practitioners can create social institutions and social world (Ganem, 2012) in a limited perspective.

According to Popper (1973), the contradiction exists only if academics and scholars are free, going deeper and further to know more about a particular subject, turning possible the formulation of research problems more clearly and where solutions can be verified or refuted. Its proposal poses as obstacles to scientific positivism, dogmatism, and psychologism.

About the scientific method applied to a Popperian research the mandatory approach is the hypothetical-deductive, where an investigative process takes place from a problem, which can rise from existing theories, followed by an initial proposal for a solution that should become a subject of propositions testing, and finally these hypotheses attempt to the contradiction during the investigation procedure.

However, what can epistemology explain about the management as a social science?

Epistemology has a character of background and justification of facts and events that once may be considered as true science, but in the current context are likely to be falsified, what hitherto academics believed to be truth in theory.

A prominent feature of epistemologist is to back from the present to the past to justify, scientifically, an argument whatsoever. Such statements give strength to the Popper's concept where the man is part of the so-called third world, which covers the critical thoughts and content objectives. Into this, man can interfere with actual knowledge, searching for the truth through a rational discussion of things, since it allows the incursions by shedding their vanities and passions.

Regarding the relationship between epistemology and the management, it must be inferred about the process of knowledge construction of this science. The Popperian thought makes scholars understand the necessity for concepts' evolution by opening new fronts where the nonconformity with reality is the background for the generation of knowledge.

Starting from the assumption of non-acceptance of reality, the beginning of refutation as a criterion for replacing theories, scholars refuse to remain tied to one or another particular postulate. The management science in this direction should become detached of its conceptions and its conventional paradigms, and seek other theories beyond its sources of scientific knowledge.

Although the management is a controversial field, where the application of different models solves organizational problems, the validity of knowledge raises the following issues: What does

the established thought between the subject and the object? What methods that make up their studies? Are they directly related to the widespread practice? By these aspects, the management still seeks an identity in the face of many organizational phenomena, different arrangements, and patterns of analysis, search for a unique characteristic that differs and qualify as the other sciences.

The management studies assume a set of proper techniques over a particular content that applied under certain conditions that can generate satisfactory results over the long term. Becoming practical applications of concepts and methodologies models and processes that can influence results. However, from where do these concepts and methodologies come?

The answer seems to be quite simple; it comes from planned, and coordinated actions applied in a particular circumstance in an organization that proved to be efficient or even useful to make suitable results to the stakeholders. These origins may be doubtful, but what cannot be omitted is the disciplinary character of matter. So, attention should be given for the institutionalization of learning practices and research to systematize concepts and set research lines of action.

According to Kerlinger (1980, p. 15) "the empirical scientific means guided by evidence obtained from a systematic and controlled scientific research." The author also states that the "fundamental purpose of science is a theory, invent and discover valid explanations of natural phenomena" (Kerlinger, 1980, p. 17). Corroborating with this Chalmers (Chalmers, 1990, p. 210) explain that "we can try any area of knowledge criticizing your goals, criticizing ownership of the methods to achieve those aims, confronting it with alternative means [...]".

Thus, the management also has its methods, its practices associated with the actions to the market, and still generates discussions on best practices and decisions at different organizational levels, which does not restrict its character of knowledge and relations between the subject and the object.

Another issue that raises clashes and more stringent reflections arises from the lack of a proper appraisal method of management, making use of other areas of knowledge such as statistics, mathematics, sociology and psychology. The use of quantitative methods for an explanation of social phenomena has gained strength in many types of research over the past years.

Hence, it is interesting to note that the management even though using methods proper to other areas deemed scientific, has by implication establishing a logic for each different perspective of the social world, simply by knowing which the real problem of research in question. A research problem is something that can be tested empirically, and "in a general sense, is a matter that shows a need for discussion situation, investigation, decision or solution" (Kerlinger, 1980, p. 35).

These exercises of criticism, dialectic, where the proposal is a change of stance by refusing what immediately comes and not remaining limited by initial perceptions, are where the true scientific spirit features awareness of the problem sense, and this is what characterizes a real scientist. Those also allow the scientist to lose his passive connotation of to the reality in times of only contemplation starts to make an active role in the construction of reality.

Exercises of criticism are the best way to advance in scientific knowledge because other questions will arise and endorse discussion of the theories and will produce new discoveries. The critical rationalism will naturally result, while its ethical base will guide its reflection and that is before its conceptions of the science, politics, and history (Popper, 1959).

Two primary tools are the core of critical rationalism: the logical consistency which means a set of logical formulas and the compliance with the facts. Popper also contributes for the rising of a new paradigm, the simplicity, and clarity as a way to separate what is false on scientific research.

His contribution to the epistemological field highlights the legacy of its criteria of falseability and falsifiability; The first related to attempt to challenge theories proposed. The second as a

scientific pattern, which considers the true principle that separates what is or is not scientific.

Popper empathized in his studies that the laws established in a society were directly responsible for the way of conduct of people. Pointing although only prohibiting what is desired, and the form of repression will be as strong as the strength and will to transgress. In summary, he proposed the relationship between the concept of ethics to the value and the problem, where value connects to an objective matter, while the problem relates to a subjective issue.

The epistemological discussion is relevant by bringing additional questions such as: What are the main changes and advances in the management with scientific knowledge as background? How far is the criticality of scientific knowledgeable to generate changes and contributions to the management theory? Would be management just a set of logical principles recognized, but without a strong base for the discussion of a particular theory?

Management works with eyes on the organizations and their relationships with the environment. In fact, management applications are much more practical than theoretical due to the necessity to address specific issues and involving the future of many people inside and around the organizations.

The apparent lack of a conflict of ideas and a careful examination in search of the truth on certain hypotheses of extensive scopes, ultimately censor the science management status. In this sense, scholars question what would or would not be the object of analysis in management. The implementation of activities is geared towards efficiency and effectiveness, being mediated by a manager who has the task of putting everything in tune. The focus given to management in different periods of history serve today as a model in many types of organizations, and each has a share of contribution.

Starting from what happens today, without reference to the past or any current theories, we must be aware of the new horizons of management. With the constant advancement of technology in different segments, discoveries and expansion of new markets, all this context puts the administration in a very dynamic world. The prevailing context of organizations allows many thoughts about their key challenges: i.e. globalization, cost reduction, social responsibility, and sustainability.

Concerning the researches relate these problems to a phenomenon, the main issue is linking them to some theories that should give the explanation necessary. The process of accumulation of knowledge in management area should allow the formation of new theories beyond the necessary process of corroboration.

Looking into the context of the area as a whole and for the characterization of a practical model of operation, the management to have their scientific nature questioned. Objectively, this makes specific changes in people management, finance, production, that are in different areas that compose an organizational structure, and its actions directly affect the outcome and the future of the organization in the short, medium and long term. Lastly, what academics wonder about management is at what point the practical knowledge and poetical knowledge (which are the norms, patterns, and guidelines on how to proceed and act to achieve a goal) that are competing or relating (Furtado, L. M. G. P. Holperin, 2012; Marques & Lana, 2004)

The acknowledgment of relevance of this theme and its ambiguity bring additional concerns on methodologies needed that can address studies and allow the progress of applications in the theoretical field. The construction of knowledge in applied social sciences is one of the main challenges, both for the growth of new business strategies, and the emergence of new and competitive organizations.

Building an applied knowledge to put in practice is one of the management's intentions. On the other hand, Popper (1973) considers that to particular types of answers the construction method of analytical models is more appropriate due to a better interpretation of scenarios and its easiness to evidence specific situation. However, it brings another question: Should the construction of an illustrative model not be based on laws that support the creation of all that exists?

The question above brings another discussion based on two different situations: one with the character of a descriptive methodology and other prescriptive. As regards management, generally speaking, it seems more concerned about how to make, i.e., with the prescriptive. It is not the intention of this essay put management as a model of prescribing mechanisms for solving problems in organizations, but instead of this, the proposal is to discuss the methodological characteristic of management which in many cases has not a theoretical framework provided by the scientific community.

The graduation programs promote the teaching of discipline as a prescriptive troubleshooting tool and consequently, the aim is to train professionals engaged in solving specific problems in different scenarios and organizations, leaving aside the development and instigation to conduct new researches for models and scientific principles leading to such phenomena.

According to the scientific communities, the degree of objectivity and the methods of a particular science links closely to its level of veracity. Due to this cult of objectivity, many scholar communities tend to reject any cognitive practice that doesn't connect to reason. The isolation of intuitive deduction for the immediatism is the leading cause for which management make decisions on short-term and for a quick profit. In some cases, dropping long-term actions jeopardizing the future of the organization and of the people who compose it.

Management theories cannot be instantly proved, being practical instead of theoretical, which ends up causing many questions along the way. The discussion of the management vision as a science is far from closing because the constant change in the organizational environment which implies in different points of views and decision-making.

In general, it involves a set of actions that affect many nodes at the same time, tracing the directions and the destination of its actors. Many actions result positively, and some don't, which turns the complexity even greater, as well as the understanding of what may or may not happen. Intra and inter-organizational relations are extremely complex and require different analyses for each situation, generating knowledge that in theory should be capable of transforming the comprehension of the organization reality.

4. Summary and Concluding Remarks

Popper (1973) explains that started from old problems to new problems saying that it is always worth the research on a particular phenomenon that is worth being studied. From this perspective, the understanding is that the management and its meander pose different problems to be solved, also taking the perception that its practical character is excellently endowed with standardized procedures and that these should not be considered as the reason for being in the study. In this respect, there is much yet to be reflected and thinking regarding the difficulty in establishing scientific management.

It can be understood given the preceding considerations that are necessary draw quite well the methods used to challenge a person or a scientific community about certain knowledge. The confrontation with the reality, as part of the development of the epistemological process, must be part of the studies of management.

The dominant thinking among scholars today is the pre-concept that management meets only instrumental interests, and under this light, the phenomena are real, but the theories are used only as a way to predict the future, and management becomes to be seen as a mere instrument of managing people and businesses destitute of science and at the same time highly sophisticated.

Another issue is the lack of understanding and comprehension of the phenomena through the logical and mathematical schemes as occurs in the natural sciences (Granger, 1993)

The truth, according to Popper, assumed criteria of veracity and there is no value in a new knowledge only if someone just says that studied a particular fact considering that it is a truth without demonstration of strong elements and scientific criteria that presume this truth, so the

criteria of conclusiveness should prevail in all aspect of a scientific research.

Popper suggests that new and stringent tests must be done to establish if a theory is correct or not, this method would be called the guiding principle of scientific research and the idea reflect about competing theories with the possibility of contradictory and choice, allowing the rise of theories that can better drill down the reality or that could deliver better solutions to solve particular problem in the organization.

It also leads to the opportunity for create and imagining the process of scientific development, by establishing a link between the idea and the theory. The researcher responsibility in applied social sciences, and notwithstanding, the management, is to create criteria for exposing the current theories tests. Consequently, the object of analysis turns more precise and less susceptible to descriptive fluctuations, because the multiplicity of particular characteristics contributes to the lack criteria of the hypothesis tested.

The progress of scientific knowledge as Popper posits must be constant and full of arguments as a way of knowledge to achieve objectivity. In the organizational context, it must have very clear what are the inherent problems in the area and establish propositions that can be tested, after by observation and experimentation try to reject them. Only under this panorama can the real knowledge can move forward in the scientific community, which in many studies it is not observed much by fear of exposure by which researchers may be subjected.

It is imperative that part of the scientific community turn the falsifiability a constant practice. What happens in a first moment is that many academics want the status of science, but few submit their concepts, theories, and hypotheses to a public display for proper refutation. In the case of administration, opening part of the scientific community in doing constant falsifiability practice is necessary. What there is at first is that many academics want the status of science, but few submit their concepts, theories, and hypotheses to a public display for proper refutation.

The change in researchers' attitude while skeptical about the classification of management as a science also need to be reviewed, because of management, even getting concepts and information from other science fields, is vital to the development of a better society.

The problem which remains from this discussion is the dichotomy between scholars who establish strict criteria and standardized methods to do science on the others who do only a brief and meticulous effort to positioning concepts based on business practices. For sure additional discussions must be done by academics to bring more light into this matter and get the best of both to strengthen management as a science.

What is expected of the scientific community is a less permissive view regarding the methodological procedures facing management. However, the importance of the transaction of products and services on the market as a whole, there is also interest in understanding these relationships from another perspective, the scientific view. Thus, the methodological accuracy will serve as a beacon to lead management to consolidate definitely as an important phylum of science.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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