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SOCIAL SCIENCES: A LOOK

¹Raylene Rodrigues de Sena , ²Clêuber Pimentel Barbosa , ³Edna Aniceto de Magalhães Cardoso

⁴LeniceYpiranga Benevides de Araújo Vieira Sá and ⁵Francisco Vidal Barbosa

¹Professor at University of State of Amazonas – UEA,

doctor degree student in Business Administration by Federal University of Minas Gerais – UFMG (Brazil).

²Professor and researcher Federal University of Amazonas -

UFAM. Doctor degree student in Business Administration by Federal University of Minas Gerais – UFMG (Brazil).

³Professora e pesquisadora da Universidade Federal do Amazonas –

UFAM. Doctor degree student in Business Administration by Federal University of Minas Gerais – UFMG (Brazil).

⁴Economista, Professora da Universidade Federal do Amazonas,

doctor degree student in Business Administration by Federal University of Minas Gerais – UFMG (Brazil).

⁵Titular Professor at Federal University of Minas Gerais –

UFMG (Brazil) and visiting professor of SchmalkaldenUniversity of Applied Sciences (Germany).

ABSTRACT:

This article presents a reflection on what should Science be and, above all, if we are really making social sciences during our academic career. The critical hermeneutic method was applied to achieve that. A popperian scientific posture is argued, considering that knowledge is the result of self-criticism and of the recurrent critique/criticism of our peers, the inter-subjectivity. It is recognized that, in social sciences, fallibility is not characterized by the acceptance of certainties and plain truths; instead it provides only temporary truths that have to be subjected to successive testing.



KEYWORDS: Science, Inter-subjectivity, Karl Popper.

INTRODUCTION

In this essay we intend to present a reflection about what should science be and, above all, if we are really making social sciences along our academic career. This somehow touches closely upon the following philosophical question: “how can we, in case we really can, acquire knowledge about anything?”

To achieve that, at first place, a brief review of what knowledge looked like before the configuration of Science will be put forth, when the vision of the natural world was mythological. Subsequently, some of the advances of formal science will be succinctly described with regard to some of the most extraordinary of such advances. Finally, the problems of the Social Sciences will be delimited and regarded as a method of investigation

and knowledge production in terms of its intrinsic challenges and specificities.

The mythological vision of the world

The survival of man in planet Earth has long demanded the vital understanding of physical and biological phenomena. Discovering patterns in Nature was essential in determining one's being alive or being dead: separating edible plants from toxic or poisonous ones... Among many different situations, human beings stared up at the stars, for example, and tried to connect the position of the planets and stars with life on Earth: the right time to seed and harvest, when to move away from the oncoming cold weather, the rain... And many questions that were born by the observations of the natural world were answered by mythological explanations: Why does it rain? Because God wants it. Only a divine entity could explain the wonders and mysteries of the universe. Whenever the reading of the sky was disturbed somehow, fear and superstition raised. A comet tracing a bright line in the sky, for example, would be interpreted as a bad presage in several communities around the world: a message from some God. In other words, this was a synonym for disaster: the plague, the death of a leader, storms, floods, droughts... The word "disaster" by itself comes from the Greek: a bad celestial body.

Science illuminates and unveils

Our view and understanding of life got through a revolution with Isaac Newton and his gravity's law, through which it was demonstrated mathematically that the planets moved around the sun. Therefore there was no more need to accept the existence of a maestro God running the orchestra of the universe. By using solely the natural laws one could predict the behavior of celestial bodies. Seeing a comet tracing its way in the sky was no longer believed as a message of an oncoming catastrophe, and started to be understood as a celestial body moving around the sun according to the logic of gravity's law. Forecasting this phenomenon could even be possible, as has been already proven for comet Halley that crosses the Earth's orbit every 76 years (COSMOS, 2014).

Prior to this Newtonian revolution, according to the Greek mythology it was believed that the falling down of an object was something influenced by the Gods. The heavier the object (or more serious sinner it is), the faster it falls towards the center of the Earth, where God Hades of the lower world lived; on the other hand the one which was lighter (or less serious sinner) would fall in a slower speed because it was attracted to Heaven, the house of God Zeus. This myth was rejected by empirical experiments, as when one throws in the air two objects of different weights at the same time and sees that both reach the ground at the same moment (COSMOS, 2014). This empirical move was decisive for the advancement of the scientific method: watch it by yourself "nvlivs in verba", question the authority.

Science is a continuous process of trial and error. It progresses with its errors, trying to eliminate one by one of them. False conclusions are refuted very often, but constitute trials anyway. Hypotheses are formulated so as to be refuted, or not, in future times.

Pseudoscience

Even with the incontestable advances in science, like antibiotics, vaccines, and DNA recombining among many others, non-scientific beliefs are still widespread. This is what is called "pseudoscience", which is a set of practices that pretend to use scientific methods and discoveries. However, pseudoscience is supported by insufficient evidence either because it ignores clues that point to other pathways, or because it counts on faith and credulity to explain a supposed eternal and undisputable truth (for example: UFOs, astrology, Nostradamus' prophecies, crystals, Atlantis, automatic writing, etc.). In pseudoscience hypotheses are formulated not to be refutable, that is, in a way that they can't be refuted by the results of any experiment empirically executed, so that such hypotheses can't be invalidated. This is opposite to a real scientific approach.

The main difference between science and pseudoscience is that the former provides ways to clearly and keenly evaluate human flaws and imperfections. Science is skeptical, and it permanently puts under scrutiny what appears to be well established, that is, there is no complete or perfect knowledge; there is always room for mistakes considering its self-limiting nature.

In favor of this view, Sagan reminds that even Isaac Newton's laws being classified among the most sublime ones created by human species, scientists don't stay quiet and let such laws go reasonably in peace. They have been searching for flaws in the Newtonian armor, and happened to succeed in this mission: Newtonian physics works well in a broad range of situations in the natural world but, considering very exceptional circumstances for human beings, like travelling in light speed, it simply doesn't point to the right answer (SAGAN, 1995). At this point one must refer to Albert Einstein and his highly prominent contribution: the relativity theory. It is exactly this recurrent critical view that makes the essence of science.

As far as it goes, science is provided with a mechanism of correcting mistakes that get incrustated in its own core, and whenever self-critical positions are adopted and ideas are tested, it is when science is being made. Otherwise if we are indulgent about ourselves and poorly critical, mixing up hopes and facts, we slide towards pseudoscience.

The Social Sciences' challenge

To get to this positive posture, the distinct sciences had to demonstrate an extraordinary capacity to explain the physical world, from the atom to the whole Nature. One blank, however, would still be open: where do we human beings fit? How to ponder about the phenomena and facts of life? Mathematics itself could not explain man's behavior. Things get even more complex when the object is the society, man's choices and the social fact. It was necessary to refer back to the Greeks and their ancient considerations about man's knowledge in order to find a proper method of the social science.

Plato didn't believe in the world we sense and perceive. For him, the world's real things don't belong to our senses, they make part of the reasoning and of the intellect. Things exist just in the realm of ideas, where models are perfect and ideal. People see just shadows, not what is real, represented by the Allegory of the Cave or Plato's Cave. Things are everlasting in the realm of ideas, and phenomena and beings are imperfect representations of things pertaining to the realm of ideas. In Plato's view moving out from the cave brings about freedom from myths and shadows, and thus reason governs. According to this context, those who studied society believed in something like a utopian, Ideal State where people would have an aspiration to follow and would attempt to get close to it. Also, man's decisions would have to be guided by reason, and not passion or emotion. Nevertheless, the rational man is Platonic, and along our mundane life we are compelled to make decisions in the search for a balance between reason and emotion, and for a state of happiness, a better life...

In another view, Aristotle believed that reality belongs to the empirical world, since there aren't two worlds. The only existing world is the one we live in. The truth is about discovering what being is and what things are. Things aren't matter, and the being is distinguished by its form. A house is a house because of its form. Form is given by four causes: material, efficacious/efficient, formal and final. The final cause is the essence. Acknowledging the world is the same as acknowledging intention/finality. Aristotle greatly contributed to the building up of the social science, inspiring Popper and others.

Kant assumed our experiences happen under circumstances conditioned by our body apparatus and that only departing from these one can imagine the specific existence of things. Beyond the limits of our knowledge there is something that can't be detected though. For example: the gas in a room won't be detected by an available camera and a recorder. Although the gas exists, it can't be seen. Under the light of Kant's theory, a thorough critical understanding about the overwhelming condition of the natural laws and consequently about positivism can be achieved. Accordingly, a theory to be accepted must be built upon valid scientific methods. What can be said, however, about NASA's project of searching intelligent life in other planets using powerful and huge radio antennas, and that was left behind in 1993? Was it because NASA concluded that extraterrestrial life is not viable? Or that it was wiser to wait until the Kepler telescope could confirm that life is likely to happen in a distant planet belonging to one of the millions of new planetary systems? Or else, that there is still lack of technological devices and equipment able to detect signals of extraterrestrial life? Will we have answers to these intriguing questions anytime? The plain fact that remains is that there are more questions than answers.

Running along another line of reasoning Max Weber rejects the idea that the natural and empirical sciences can provide general rules and statements for the whole body of science. In the social sciences, for instance, a judgment of value is considered and choices are not offered; this is personal and has an intrinsic cost

of opportunity. Therefore, Weber states that it is impossible the searching for the scientific truth through the laws that explain the object because the object of the social sciences is historic, mutable, dynamic and unpredictable. In other words, the object of the social science is the social action (WEBER, 1992). So the social scientist works with patterns and models. Weber was one of the most prominent thinkers of all times, and his comprehensive sociology focused on the understanding the final meaning of the human action: what does shaking hands mean? I believe it demonstrates friendship, but does it have the same signification in a different society?

Husserl's phenomenology agrees with Descartes when affirms that the solid knowledge has to come from the mind. The perception that something exists is possible through the senses of some intention, signification. Turning back to things themselves. Reality is a construction of the subject and phenomenology is the building up of the social reality. A family, for example, is made up by father, mother, siblings and the anthropologist. The observation being part (DARTIGUES, 1973). An object doesn't exist without a subject; it is like turning back to things before the signification, because a world already existed before our interpretations and analyses came to play, that is, back to the essence.

In another view Popper sees science undergoing a constant epistemological rupture, since a theory is valid only after being tested. A key Popperian term is "falsifiability" which consists of testing a particular theory: the more the theory resists to tests the higher will be its scientific value. Falsifying a theory is submitting it to self-criticism and, later on, submitting it to peers' critiques in what is called inter-subjectivity. The more the theory endures, the closer it will be to the truth (POPPER, 1978). Popper believes that science always moves towards the truth in a continuous and recurrent process, although it never gets to it.

We shall admit our lack of knowledge, and reading Popper permitted us to understand the breaking up of the paradigm of the "good" scientific theory. What makes a scientific theory "good" is not the fact of it being confirmed somehow, but the fact that it can be frequently attacked (and tested) and still resist to be refuted. This way it gets progressively stronger ("better").

Let us consider the classic example of the swans: one white swan was observed, then two white swans, ..., and then 1000 white swans, so the conclusion is that all the swans are white. In this case an observation mistake could have happened, since it can be accepted that not enough swans were observed and one swan of a different color might appear. So according to the falsifiability principle one black swan has to be found (or even a swan of a different color), a fact that would tell what is not permitted in this theory: if this theory is wrong a swan that is not white will appear. Through the undemonstrative hypothetical induction the theory in question shows that all the swans observed are white, no black swan was observed. It is reasonable to say that all swans are white.

The same Popperian logic helps us state: the sun rose yesterday, the sun rose today, so the sun is going to rise tomorrow, assuming there won't be any oncoming catastrophe to prevent that.

Kuhn speaks, above all, about what a paradigm would be, understood as a belief that supports other theories. Following Kuhn science doesn't keep on recreating the wheel, but it departs from the once invented wheel to reach to other discoveries. Through science the wheel is improved. Only when a better wheel appears the former one is abandoned. This is what characterizes a paradigm rupture, that is, a radical shift in accepted beliefs. This happens with the reexamination of Newton's theory under the light of Einstein's relativity theory, a point at which the former Newtonian paradigm broke up. Kuhn wouldn't accept the hypothesis proposing that science is evolving and actually believed just the opposite: a paradigm rupture destroys a general belief, forces such belief to be left behind and readily throws it away. When the previous paradigm shows some anomaly it can't explain the reality anymore, and is substituted by the new paradigm. Kuhn admitted that only in exceptional circumstances the scientific community accepts a paradigm shift, just like when we resist to disrupt our own precious paradigms (KUHN, 1975). The notion of "paradigm rupture" is, not by chance, one of the most debated concepts among both intellectuals and laymen alike.

FINAL CONSIDERATIONS

Along an academic career the attitude of constant self-criticism is the one expected by those who assume him-herself a Popperian, and also by those who claim to be making science. This includes the

commitment to falsify one's own theories continuously. Science will be made whenever one is exposed to his/her peers' critiques, the inter-subjectivity; whenever a skeptical standpoint is assumed with regard to what is supposed to be known. In order to avoid being trapped by the feeling or conclusion that the permanent and absolute truth was reached, one shall recognize that the truth is unreachable, and the only thing that remains possible in face of this is getting close to the truth without ever acknowledging it plainly. To sum up: the act of making science must always be addressed through the constant and permanent questioning and doubting about what is considered to be true and thoroughly acknowledged, thus rendering a proper scientific attitude; Science is the practice of humility.

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