

SOME MISTAKEN ARGUMENTS AGAINST OBJECTIVITY AND TRUTH IN SCIENCE

Por

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Resumen

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Se presentan y analizan varios puntos de vista en relación con la verdad y la objetividad en la ciencia, objetadas recientemente por algunos historiadores y sociólogos de la ciencia.

Palabras claves: Objetividad en ciencia, sociología de la ciencia.

Abstract

Some harmful viewpoints about objectivity and truth in science are presented and they are analysed on the basis of currently accepted concepts in normal scientific research and technological applications. The social and professional duties of scientists in these regards are pointed out and some possible answers against the anti-science movements are given.

Key words: Objectivity in Science, Sociology of Science.

Introduction

Bondi describe able and good scientists as "... (those) respected by the scientific community. This means in effect that they must have carried out some outstanding research, for there is no other way to recognition as a scientist. To do good research it is essential first of all for a

scientist to look at a good problem, that is to say a problem that is not only interesting but one that yields to a lot of hard work performed with skill, imagination and experience. One does not become a great scientist by tackling insoluble problems. Next, research is considered successful and conveys fame on its authors only if it influences other, if it leads to further work. It is not important for the standing of the scientist that this further work should necessarily confirm all that has been said in the original paper. As long as it is stimulating, as long as a result of the going forward and backward the amount of knowledge and understanding increases and has been stimulated by the first work, then this deservedly has a

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high reputation. One tries many different approaches before the problem shows the slightest signs of yielding, and very often the problem on which one actually makes one's contribution is somewhat different from the one on which one started".(1)

Perhaps this quotation should seem rather naive and elementary, but those people involved in research know quite well it is suitable and correct. The purpose of this introduction is to help us to stand up for my main point: some sort of anti-science fashion has been growing up under many different perspectives and sometimes appealing arguments. This sort of "sleep of reason" has been presented to try to establish solid "raisons d'être" in favor of this standpoint. Labels such as post-modernism, anti-rationalism, sociological relativism, deconstructivism, alternative sciences, academic left, sociology of scientific knowledge, etc. portray a wide set of pseudo-scientific doctrines which entail very serious dangers for our whole society.

At the same time, we are enjoying in our daily life of the evident and material benefits of huge amounts of technological developments derived from the basic research in every area of science. Day after day we all hear about the continuous expansions of knowledge frontiers and fruitful applications that follow such extensions.

When one analyses comparatively those anti-scientific doctrines and the traditional and successful theses of natural philosophy which is the foundation of current research and development, there appear gross contradictions. This issue is not new and it has deserved the attention and study of many people. The aim of this article is to discuss why so opposite viewpoints survive and which are the basis of these two quite different theories, with a permanent reference to the usual scientific and technological results in order to set up the final conclusions.

The eventual value of this analysis lies on the very fact that this opposition permeates underlying principles of our way of life, about which it is no at all underserving to think about from time to time. My greatest hope is to stimulate awareness and debate about some mistaken arguments against objectivity and truth in science and also to point out in a so clear way as possible that what is threatened is the capability of our contemporary culture to interact fruitfully with the sciences, to draw insight from scientific advances, and to evaluate science intelligently.

Traditional science versus post-modernist theories

The way usual practitioners of current science understand their metier is closely attached to the concepts of

objectivity, truth, rationality, and the scientific method. Although it cannot be assumed that every scientist would be able to give precise definitions about such fundamental general notions, the work they do, the way of thinking and the manner of behaving in scientific affairs is based upon them in an implicit or explicit way. Since the scientific practice is a human affair, it is well known the existence of many sort of deviations (2-4). However, they do not invalidate the standard research tasks although some people have resorted to such failures to try to demonstrate the weakness of the complete scientific enterprise. We cannot condemn the whole human race due to the regrettable existence of some murderers.

On the other hand, the doctrines of social constructivism take scientific theories to reflect the social environment where they come out and, rather than being founded on objectivity, logic, and evidence, beliefs are taken to be causal effects of the prevalent social context (5-7). When this sort of doctrines are developed at length one is led to whichever kind of vagaries. Perhaps the extreme one is due Feyerabend (8): any proposition is scientific since there is only one principle that can be defended under all circumstances and in all stages of human development. It is the principle: Anything goes !! A brief description of the main advocates of the doctrines of social constructivism can be found in refs. 9 and 10.

But, if as it seems to be so evident, these doctrines are entirely absurd and nonsensical, why they have reached a wide acceptance in some so-called intellectual people? And why articles and programmes attacking the scientific theses and championing the antitheses are published and scattered almost everywhere? Most probably there are a host of reasons and ways to understand this state of affairs.

Bunge (9) proposed a sociological explanation on the basis of a revolt against the establishment and the European rigid university hierarchy on the sixties. The consequent adhesion of antiscientific doctrines took away many young people from studying sciences and favoured the non-scientific approach to the sociological, historical, and philosophic study of science and technology.

I deem that the blend of sociology, science, culture, and politics sounds attractive and promising the development of very new disclosures about the scientific field. It is true that scientists work within an specific social environment, influenced by a given political context and partly determined by the prevailing culture associated to that social environment. However, when one relativizes or even denies the actual existence of an objective reality

and the material regularities in our actual world, then revolting consequences arise at once: failed or dubious scientific claims should weigh as heavily in our view of science as successful, well established ones; social factors are guiding the production of scientific knowledge; scientific agreement is connected to views of how things really are; Nature is excluded as a determining factor in scientific research and development in favor of culture; a proposition is scientific if is sanctioned by the scientific establishment; etc.

But then, which is the exact relationship between science and culture? This subject is quite to develop here even a modest discussion and besides it has deserved the attention of several researchers which analysed the theme in depth (11-18). Notwithstanding these references, I consider a relevant side of this issue to be pointed out here: what is subjected to mutation and permanent influences of social, economical, political, historic and cultural factors is not the well founded status of science, but rather the dynamical and changing research mechanisms.

Another reason to support these iconoclastic views on science appears to be a well defined (although not properly understood) political goal: a wish to "democratize" science by exposing it as nothing but negotiation and inviting the lay person to be constantly skeptical of scientific experts. I think the proper way to put science at hand of people and share its benefits is offering possibilities and facilities to everyone to learn the basic principles and to make suitable experiments in the manner, for example, the Science-By-Mail program does (19-20), but not via a contestable attitude. The public cultivation of the systematic distrust of science can only lead to negative results for all the people. Unfortunately, this is happening nowadays (21).

The growth of academic anti-science post-modernist critiques has aroused also with the implicit compliance of scientists themselves (22). In fact, hardly any scientists have attempted an answer, but they should. There can be little argument over the fact that scientists are doing not much efforts to educate their fellow citizens about matters such as global threats that have arisen partly from the hands of the scientific and technological community, global warning, new significant discoveries, development and applications of new materials, recent advances in medicine, etc.

We can also trace the growing importance of postmodern and multicultural efforts to "demistify" natural sciences on several examples of forgery, fakery, and plagiarism that have happened along these last years (4).

Nuclear fussion phenomenon, Benveniste's affair, and Imanishi-Kari case are three well-known outrageous incidents that influenced the diminishing of the trust that society places in science, challenging every positive image of science that society holds. However, fads and fallacies in the name of science are not new (23) and there has been a extremely long list of pseudo-scientists and strange, amusing, and alarming cults that surrounded them. Systematized vagaries such as naturopathy, iridiagnosis, orgone sex theory, dianetics, the theory of multiple moons, flat earth, cellular cosmogony, Fortean doctrine, flying saucers, antirelativism theories, perpetual motion machines, dowsing rod, doodle bugs, bion particles, Lysenkoism, physcultopathy, Perkinism, Drown radio therapy, etc. are very old indeed, and each of them at their time found a host of followers, adepts, and practitioners. But, in spite of them, normal science continued its development and today we are receiving the beneficial consequences of research and development.

Since not very long ago we are being nearly overcrushed by the so-called "information flood", where many interesting and curious side-effects are being produced (24-26). One of these undesirable consequences is the weakening of the human critical power capabilities in favor of an anomic attitude regarding every day news and happenings. This is so because of the continuous flowing of information overload does not allow one to have time enough to reflect and analyse the specific contents of the news. Furthermore, the owners of the information centers are more interested to sell at once their goods than to communicate the news in a clear, veritable, and useful way in order to promote the critical thinking. Under such conditions, it is quite understandable that these "grotesque cartoons of scientific research" (27) attached to the doctrines of social constructivism can find their own way in printing. After all, mass popularity and prevailing fashion are more satisfied when someone says that "normal science is a fairy tale" and that "equal time should be given to competing avenues of knowledge such as astrology, acupuncture, and witchcraft" (28).

The fallacies of these deviant irrationalism doctrines have been clearly exposed by several academic philosophers (29) so that it does not deserve here further comments at all. On the other hand, the study and practice of sound science teach us some important concepts that should be part of the knowledge of every citizen: events in the natural world occur throughs the working out of universal laws of nature and many aspects of them are accesible to human intelligence through theories, models, mathematical equations, general principles, etc. But,

at the same time, there are other unifying principles we do not know up to day and researchers work hard to apprehend them. Thus, we can see that the development of the universe, or the Earth, or a society, or a piece of any material is the result of some sort of law. As a consequence, one begins to understand that humans are also part of the natural world and subject to Nature's laws. The existence and widespread of laws is the main lesson.

¿Is there a real problem associated to the anti-science movements?

Certainly, the anti-science movements represent a very serious problem and they demand a solution (30). Although it may be true that at a given moment "anything goes", in the long run one thing securely goes: objective truth. But, what about the period of time starting at a given moment and the ending of the long run?. The answer is the task that scientists are obliged to undertake themselves. This task comprises several steps, among which I deem the most important ones are:

- The normal making of science according to the standard rules.
- To know about existing deviant science and scientists.
- To engage themselves to educate laymen in every possible way, mainly children.
- To publish general articles about new advances in science and technology.
- To attach their makings to fundamental concepts as objectivity, truth, rationality, and the scientific method.
- To give relevance to formal science education at schools and universities, instead of being totally devoted to fill the pages of the most reknown journals with learned articles on frontier themes.

It is true that these items are by far more easily written than made and there is a social objective reality around us posing strong limitations to undertake some possible remedial actions. Admittedly, we are known (or remain anonymous) in science by whatever papers and books we publish. And to be known means to get funds, to have people working in our laboratory, to be invited to important scientific meetings and so on and so forth. However, the current predicament of science in some political networks is rather low and some nasty drawbacks have arisen (31) showing us that an acute problem exists and

most probably nobody can help science better than scientists themselves.

It is interesting to note the close resemblance existing between quantum mechanics and science with respect to the current status and normal practice on one side, and the interpretation and value assesement on the other one.

Quantum mechanics is today a well established theoretical frame to explain, understand, correlate, and predict facts un Physics and closely related sciences (Chemistry, Biochemistry, Pharmacy, etc). Nevertheless, when one enters into the interpretation realm there appears a host of possibilities an the so called quantum paradoxes arise. Up to day, it has not been possible to find an universally accepted interpretation of quantum mechanics free of paradoxes, although the different proposals declare to be valid on their own way (32-46). This leads us to a disturbing question: do these paradoxes and quite different interpretarions really make up a flaw in our understanding of quantum theory or do they have no sound scientific significance at all? Notwithstanding, these uncertainties and perplexities do not seem to have kept back successful application of quantum theory to the study and development of Physics.

Science relies on exact measurements of regularities in the real (material) world and scientists come to agreement on the basis of facts and experimental results which actually guide the production of scientific knowledge. In this sense, we can see there is an objective reality corresponding to each particular material fact and concomitantly there exists a real truth. The denial of truth and reality in science reduces it to a pointless game, a meaningless exercise, and a destinationless journey. From the philosophical standpoint we can agree that truth and reality are basic concepts which are amenable of further discussion and categorization, but the usual scientific enterprise is based on the objectivity of theory-free and context-transcendent observation. After all, the boiling point of water has been exactly specified, albeit the existence of an eistemological relativism, which, for example, tries to replace truth and objectivity by so odd concepts such as mass popularity, prevailing fashion, scientific establishment decrees, transient vogues, current ideology, and the like.

Conclusion

The aim of this article is merely to show that something is happening with respect to normal and current scientific practice and consideration, and to indicate broadly

some ways to solve it. Now it remains to be seen up to what point we are capable to give a suitable and sensible answer to this state of affairs.

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