SOME MISTAKEN ARGUMENTS AGAINST OBJECTIVITY AND TRUTH IN SCIENCE

Por

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Resumen


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 describes 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 firsts work, then this deservedly has a
high reputation. One tries many different approaches be­
fore the problem shows the slightest signs of yielding,
and very often the problem on which one actually makes
one’s contribution is somewhat differnt from the one on
which one started”.(1)

Perhaps this quotation should seem rather naive and el­
ementary, but those people involved in research know quite
well it is suitable and correct. The purpose of this intro­
duction 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 ar­
guments. 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-rational­
ism, 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 tech­
nological 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 nat­
ural philisophy 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 stuy
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 re­
ference 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 ar­
guments against objectivity and truth in science and also
to point out in a so clear way as possible that what is threat­
ened is the capability of our contemporary culture to in­
teract 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 under­
stand 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 fundamen­
tal 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 scien­
tific practice is a human affair, it is well known the exist­
ence 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 regret­
table existence of some murderers.

On the other hand, the doctrines of social con­
structivism take scientific theories to reflect the so­
cial enviroment where they come out and, rather than be­
ning founded on objectivity, logic, and evidence, beliefs
are taken to be causal effects of the prevalent social con­
text (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 de­
fended under all circumstances and in all stages of hu­
man 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 scien­
tific theses and championing the antitheses are published
and scattered almost everywhere? Most probably there
are a host of reasone 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 Euro­
pean rigid university hierarchy on the sixties. The conse­
quenct adhesion of antiscientific doctrines took away many
young people from studying sciences and favoured the
non-scientific approach to the sociological, historical, and
philosphic study of science and technology.

I deem that the blend of sociology, science, culture,
and politics sounds attractive and promising the develop­
ment of very new disclosures about the scientific field. It
is true that scientists work within an specific social envi­
noment, influenced by a given political context and partly
determined by the prevailing culture associated to that
social enviroment. However, when one relativizes or
even denies the actual existence of an objective reality
and the material regularities in our actual world, then re-
volting consequences arise at once: failed or dubious sci-
entific claims should weigh as heavily in our view of sci-
ence as successful, well established ones; social factors
are guiding the production of scientific knowledge; sci-
entific 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 it is sanctioned by the scientific
establishment; etc.

But then, which is the exact relationship between sci-
ence and culture? This subject is quite ti 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 con-
sider 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 fac-
tors 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 prop-
erly understood) political goal: a wish to “democratize
science by exposing it as nothing but negotiation and in-
viting the lay person to be constantly skeptical of scien-
tific experts. I think the proper way to put science at hand
of people and share its benefis 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 happen-
ing 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 scien-
tists have attempted an answer, but they should. There
can be little argument over the fact that scientists are do-
ing 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” natu-
ral sciences on several examples of forgery, fakery, and
plagiarism that have happened along these last years (4).

Nuclear fusion phenomenon, Benveniste’s affair, and
Imanishi-Kari case are three well-known outrageous in-
cidents that influenced the diminishing of the trust that
society places in science, challenging every positive im-
age of science that society holds. However, fads and fal-
lacies 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, iridagnosis,
orgone sex theory, dianetics, the theory of multiple moons,
flat earth, cellular cosmogony, Fortean doctrine, flying
saucers, antirelativism theories, perpetual motion ma-
chines, dowsing rod, doodle bugs, bion particles, Lyen-
koism, 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 develop-
ment and today we are receiving the beneficial conse-
quences of research and development.

Since no very long ago we are being nearly
overcrushed by the so-called “information flood”, where
many interesting and curious side-effects are being pro-
duced (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 continuos flowing
of information overload does not allow one to have time
even enough to reflect and analyse the specific contents of the
news. Furthermore, the owners of the information cen-
ters 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 doc-
trines of social constructivism can find their own way in
printing. After all, mass popularity and prevailing fash-
ion 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 philoso-
phers (29) so that it does not deserve here further com-
ments 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 uni-
versal laws of nature and many aspects of them are
accessible to human intelligence through theories, mod-
els, 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 oblige 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 rater 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 assessment 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 paradoaxes, 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 interpretations 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 vagues, 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.

References

6. __________, Science Educat. 3: 265.
7. __________, Science Educat. 3: 329.