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The culture of science

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1 The 'Final Truth'

An interview grabbed my attention in a Romanian newspaper a few months ago. A "researcher" claimed that, his book entitled "The Final Truth", was "bridging the gaps between the idealistic, materialistic and ezoteric worldviews". You could also learn from the interview that thoughts cannot arise in the human brain, they must come from somewhere else; that Darwinian evolution is wrong; that there must be another Universe that "consists of electromagnetic waves of higher frequencies"; and that this high-frequency Universe is the source of all human thought, UFOs, religion, astrology and paranormal phenomena.

The fact that somebody, who by all means would satisfy most criteria for the recognition of a crackpot, comes up with a handful of ideas that are either age-old or simply silly and tries to sell them as revolutionary scientific results, is not new and would not grab my attention anymore. It was the style of presentation that forced me to think about this article a bit longer: the editor (and interviewer) tried to create an aura of scientific authenticity by saying that people from Chalmers University in Goteborg, Sweden and the Hungarian Academy of Science "expressed interest" in the book; and by mentioning that the author has spent many years doing research on these subjects in Sweden. I could not resist writing a letter to the newspaper and pointing out that the "research" of this gentleman is far from being science and, if presented at all, it should be presented accordingly, either as metaphysics or philosophy (of the sloppiest kind, I must add), or as just another muddled rambling about other-worldly energies and paranormal nonsense. But not as science and a Nobel-prize-worthy intellectual achievement.

The letter was published, and it generated a series of pro-and-con articles in the Transylvanian newspaper. With the exception of a mathematician, who was slightly critical of "The Final Truth" and its author, everybody, including the editor, were enthusiastic about them. They either said that this *was* science, my opinion nonwithstanding, or that this was *more* than science, because it integrates the 'spiritual dimension' with what we know from science. Those who argued against my criticisms included a 'chief psychiatrist' and a 'university professor'. After a few months of replies-to-the-replies, the editor finally closed the argument by writing that he was proud of starting these series of articles about "The Final Truth", and the importance of the book was also suggested by the fact that it drew the attention of "American researchers" as well. He just forgot to mention what the "American researchers" had to say about it.

It is true that the newspaper I am talking about is not a major paper in Romania; that it is published in Hungarian, therefore it has a relatively small readership in Transylvania, more precisely in the city of Cluj. I think however that it is diagnostic of how science is understood in this part of Europe. After all, Cluj has one of the largest universities in Europe (more than 40,000 students and 1500 faculty), and I find it worrysome that nobody of the several thousand Hungarian-speaking faculty members and students takes the time to fight such science-degrading nonsense that surfaces from time to time in the media. They either do not know how to tell good science from bad science or pseudoscience, or they do but couldn't care less.

2 Science and culture

Where I grew up, science - if the word is understood correctly - is not considered an essential part of being well-read, well-informed, and well-educated. A lot of 'intellectuals' are enthusiastic about science - as long as astrology or Chinese medicine are included, as long as great scientists can be used as boosters of national pride, or as long as you do not exclude postmodern literary criticism (the term "literature science" is often used in Hungarian and it gives a hint of how broad the meaning of the word 'science' is in some circles). When I was in high school in a small Transylvanian town near Brasov, math and physics were thought to be important only because at that time (in the eighties) these subjects meant the safest route towards college education. Almost everybody seemed to know that real knowledge and real culture can only come from the study of literature, art and history. And I think this attitude did not change since then, or it even got worse: it is still OK if you don't know what a fractal is or how the genetic machinery inside us works, but you cannot be a real intellectual if you cannot talk about Shakespeare, Ionesco, Derrida or Tarkovsky for at least as long as two beers last at the pub. In their excellent analysis of the status of science in post-communist Romania, Liviu Giosan and Tudor Oprea suggest that "culture wars" between the "two cultures" would be "suicidal at best" [1]. I am afraid that there is no danger of "culture wars" or "science wars" in Romania, simply because the intellectual elite is dominated by people with little or no scientific background and a 'culture of science' does not exist. One obvious piece of evidence is that none of the major Romanian daily newspapers has a science and/or technology section. While 'science writing' has become an exciting profession in the West, it is essentially non-existent in Romania. Yes, Discovery Channel is available in many cities [let's put aside now the fact that not all of its programs are scientific] and I hear there is even a Romanian edition of Scientific American, but, to put it mildly, there is a lot of room for improvement in making science more socially accepted, better understood, and part of mainstream culture.

More reliable than my little pieces of anecdotic evidence are the results of a recent study prepared for the European Commission: an Eurobarometer report on "public opinion in the countries applying for European Union membership" [2]. There are several statistics that suggest a *positive* attitude towards science in the candidate countries in general, including Romania. For instance, 78% of Romanians (81% on average in the thirteen countries) agree with the statement that "science and technology are making our lives healthier, easier and more comfortable". Also, 74% think that "even if it brings no immediate benefits, scientific research which adds to knowledge, is necessary and should be supported by government", and scientists are regarded by 51% of the respondents as having a highly prestigious profession. Other numbers however are less encouraging. In the category of "knowledge of fundamental scientific facts", the average number of correct answers given by participants in Romania is significantly below the average in the EU or in many other Eastern European countries. Compared to the rest, Romanians did poorly in in recognizing the scientifically correct method for drug testing (15% correct answers compared to more than 30% in most other countries).

I am not convinced that these differences are extremely important or disconcerting. The gaps between statistics on science in Romania and in other candidate countries or the EU increase from barely significant to orders of magnitude as one goes from the attitudes and knowledge among the population to governmental investments in R&D and to the number of scientific publications. To add only one number to the analysis of Giosan and Oprea [1]: the gross domestic expenditure on R&D in the field of natural sciences in 2000 was 12.1 million euros in Romania, compared to 59.1 million in Hungary, 185.9 million in the Czech Republic, and 261.9 million in Poland [3].

But my main concern here is not science policies, R&D expenditure, or the quantity and quality of research in Romania. What I wanted and started to talk about is the lack of a ‘culture of science’ in the mass media and among intellectuals in general, including many of those who are employed by universities or research institutes.

3 The 'culture of science'

Science has become much more popular and fashionable in the West during recent decades. Numerous science books written for the general public in a simple language - but without too much dumbing down - are bestsellers. It is possible now to make a successful Hollywood movie about the life of a mathematician. Most large bookstores have an impressive collection of popular science books. Some of these books are much more than popular science: they are frequently cited in the real scientific literature and have a strong influence on the field; many represent an inspired - and inspiring - mix of scholarship in the natural sciences, philosophy, and good writing. Authors like Richard Dawkins, Stephen Jay Gould, Steven Pinker, Daniel Dennett, Steven Weinberg have become a lot more popular than numerous highly regarded names in postmodern literary criticism and philosophy. [Frankly, I am not surprised. Try reading an essay or a book by one of the science guys and compare it to a representative writing of the of the postmodernist camp.] Museums of science, technology and natural history in the United States are larger, richer, and more interactive than ever. Whenever a famous scientist gives a public presentation, lecture halls are quickly filled and tickets are sold out in advance. A few months ago Stephen Hawking gave a lecture in Houston. All of the almost 5000 tickets that went on sale were gone by the time of the presentation.

The two cultures of C. P. Snow [4] are antagonistic or lack real communication only in the eyes of those who still see the arts and the social sciences entirely independent of the natural sciences. The best and some of the most influential thinkers of our time are scientists who are also good writers – or writers/artists who know quite a bit about science. This 'culture of science' has been given the name "third culture" by literary agent and science writer John Brockman and is promoted on his website "The Edge" (http://www.edge.org), a discussion forum for a distinguished group of scientists and 'new humanists'. Twelve years after introducing the idea of the 'third culture', Brockman suggests that "the third culture now includes scholars in the humanities who think the way the scientists do. Like their colleagues in the sciences, they believe there is a real world and their job is to understand it and explain it. They test their ideas in terms of logical coherence, explanatory power, conformity with empirical facts. (…) They are not reducing the humanities to biological and physical principles, but they do believe that art, literature, history, politics – a whole panoply of humanist concerns – need to take the sciences into account."

As I already suggested, I do not think that the 'third culture' and the 'new humanists' have a strong presence in Romania. Most people base their worldviews entirely on tradition and authority or embrace either the numerous new waves of mysticism and pseudoscience or a nihilistic and relativistic postmodernism. Although not everything is going well in this regard in the Western world either, I still hope that getting closer politically and economically to the European Union will increase not only the quantity and quality of research in Romania, but will also improve science education and the acceptance and understanding of science.

Like in other, more western parts of the world, most people in Romania seem to have an overall positive attitude toward science. They just don't know what exactly it is. Those few who know better have the responsibility of educating the general public. For example, by speaking out when pseudeoscientific or antiscientific nonsense hits the media; explaining in simple terms but with convincing logic why pseudoscience is not science or why darwinism and evolutionary theory cannot and should not be blamed for the horrors of fascism and communism. It is unlikely that a country will have its Silicon Valleys and a greatly successful economy as long as its political leaders and influential intellectuals do not recognize the importance and value of both scientific research and of science education. In the long term, they should also realize that the social sciences and humanities cannot ignore the natural sciences anymore. As evolutionary biologist Edward O. Wilson put it [5], "most of the issues that vex humanity daily – ethnic conflict, arms escalation, overpopulation, abortion, environment, endemic poverty, (…) cannot be solved without integrating knowledge from the natural sciences with that of the social sciences and humanities. Only fluency across the boundaries will provide a clear view of the world as it really is, not as seen through the lens of ideologies and religious dogmas or commanded by myopic response to immediate need."

References

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