

Why the postmodern attitude towards science should be denounced

Postmodernism is a philosophical, political, social and artistic movement. It is mainly defined by its suspicion towards the Enlightenment's faith in science, progress and the universality of reason. It has become a powerful movement that exerts a strong influence on academic thought in American and European societies, especially as it has become hegemonic in some institutions. Considering its influence on so-called 'science-society debates' and its criticisms formulated against the scientific method, it is legitimate, in turn, to analyse critically its claims and the consequences of these claims, especially those from the 'science studies'—also called 'science and technology studies'. This postmodernist, mainly sociological, discipline has gained momentum in the past few decades in its appreciation of science and technology; it uses specific concepts that create a specific vision of scientific research as a social activity.

An initial reflection concerns the shift from 'public understanding' of science to 'public engagement' in science. A typical delusion of the 'science studies' community is the belief that "knowledge co-production beyond the classic expert communities... can substantially benefit scientific design." In fact, science has become so complex and specialized that co-production among scientists from various fields is becoming a difficult task. Therefore, when it comes to the layperson, even with the involvement of social scientists, co-production of knowledge is nothing more than a myth. Of course, examples of collaboration between professional scientists and 'amateurs' do exist, and can be mutually beneficial—when botanists collect seeds from plant species for conservation purposes or when amateur astronomers detect interesting phenomena in the sky. But note that in both cases there is no hidden political agenda. By contrast, for genetically modified organisms

(GMOs), which are criticized for their industrial and commercial use, and for the alleged political consequences of their use, there are powerful political forces at work. Collaboration between medics and patients is often cited as a successful example, but this cannot be considered as an equal co-production of knowledge, as the two are not commensurate, neither psychologically nor factually: the patient, of course, is the only one who knows what sort of pain he feels, but the physician is the one who has the knowledge to diagnose the ailment and prescribe the remedy.

The second most commonly heard comment concerns the claim that no opinion is better than any other—which is actually a criticism of mainstream scientists. Of course, ambiguity and diversity of opinion are both inherent to mankind. But this is where science begs to differ by trying to develop a discourse that goes beyond matters of opinion, to demonstrate and express matters of fact and proof. No one can claim that the scientific process is purely technical and objective; after all, scientists are human, and there are probably as many dishonest people in the scientific community as there are elsewhere. However, science strives towards objectivity through the implementation of method. One should not confuse, as 'science studies' sociologists tend to, science in the making and established science. The former can be built on scientific disagreement, but eventually the true facts are established.

The third critical analysis concerns claims of alleged "interests at work in science". This typically postmodern attitude towards science should be denounced because it casts suspicion on scientific activity as 'intending' something other than what it 'seems' to be doing. This can be considered a direct attack on the honesty and integrity of scientists as a professional group, as well as an attempt to discredit the scientific method. One should

not confuse scientists (human beings) and science—a conceptual methodological process of accessing the truth in relation to the world. Some scientists might have disseminated false information on the health risks of tobacco, but the fact that smoking increases the risk of cancer has been proven by science. Following the 'science studies' approach, we would still be discussing, in stakeholder forums for example, what is cancer.

It is regrettable that, as soon as someone denounces attacks on science, some scientists feel the need to express *mea culpas* in the name of all scientists, past and present. What is at stake with relativists is that they introduce doubt into everything—truth, value, beauty and reason—that goes beyond sociology. It is unfortunate that some scientists tend to fall into that same trap, confusing the ordinary behaviour of human beings with the capacity of science, as a source of knowledge, to learn about the laws of nature. Relativist ideology is trying to undermine science and it might succeed, especially if scientists themselves express doubts about the honesty and the rationality of their own work. The same holds true for the naive acceptance by scientists of the misuse—by political ecologists, for example—of alleged conflicts of interest. In the case of real conflicts of interest, criticism is entirely appropriate, but the 'outing' of conflicts of interest is becoming a 'weapon of mass destruction', aimed at any relationship with industry. Meanwhile, activists exonerate themselves from such declarations, despite the fact that they are defending an 'interest' per definition, either in support of their own ideology, or even sometimes their interests in 'green' business.

The role of a scientist is not to engage in decisions concerning the 'best interests of society'. This is, or should be, the role of politicians. A scientist's role should be to communicate as honestly as possible about what we know and what we do not know.

Contrary to the claims of postmodernists and political ecologists, the truth is that scientists do actually know a lot about GMOs. GMOs have been subjected to an unprecedented battery of scientific studies, conducted independently from the industry, which have dealt with all possible risks. Scientists are also aware of what they do not know. Decision-making—which risk management strategy should be implemented, or which risks can or cannot be taken—is the role of politicians and has to be distinguished from risk assessment, which is a complex, highly technical, scientific process. It is essential not to drag scientists into the political field. It is also no less essential that politicians and political activists do not interfere with the scientific methods applied in risk assessment. Taking into account social, moral, political and economic opinions, or cultural frames for risk assessment, would mean that the scientific method is supplanted by ideology, as is often the case in the GMO dispute. As stated by the European Food Safety Authority's Executive Director, Catherine Geslain-Lanéelle, in an interview with the French newspaper *Le Figaro* (published 14 November 2012): "If we managed fifteen years ago to shun industrial off the evaluation committees, it was not for NGOs involved in the fight against genetically modified crops [...] to take their place! That would be a regression, dangerously turning back the clocks" (translated from French by M. Kuntz).

Accusations of 'scientism' are repeatedly uttered against those who defend

the scientific method. However, scientific considerations on risk analysis have nothing to do with 'scientism', a nineteenth century mystical belief that, to quote philosopher Ernest Renan, wanted to "scientifically organize humanity". One should also note that 'scientism' relates to the ideas of Auguste Comte and others, who were convinced about the existence of a "social physics", that is to say a 'scientific' study of man and society—in other words, sociology. Scientists do not—or should not—talk in the name of society. It is relativists and political ecologists who continuously—and illegitimately—do so, even in the name of 'future generations'.

When postmodern sociologists claim to help science and scientists in their exchange with the socio-political world, it is legitimate to express doubt if the consequences might transform science into a social and political activity devoid of truth-seeking. It is also legitimate to analyse the way postmodern intellectuals are teaming up with 'green' ideology. Criticism of the latter does not mean dismissing public concern, but it is important to point out that some organizations create these 'concerns' due to their exceptional ability to use the media and internet. They create a 'parallel science' with pre-established conclusions that induces confusion in people's understanding of scientific knowledge. Thus, a small minority exerts a major influence, not only on political decisions, but also on scientific risk assessment. This was exemplified when the Séralini scandal—a high-profile study published in September

2012 that claimed long-term health effects on rats after GMO consumption, which has been widely refuted by other scientists and scientific authorities—prompted politicians and French risk-assessment agencies to recommend even more long-term feeding studies on GMOs. Many of these have already been performed and have revealed no health effects [1]; not to mention that farm animals have been fed on GMOs for the past 15 years with no observed negative health effects.

It is now clear from the experience with the GMO dispute that neither the 'participative' postmodernist approach, nor the 'parallel science' created by GMO opponents, has led to any benefit for science, for risk assessment or for the general understanding of these processes. Consequently, politicians and the heads of scientific organizations should explore other paths for other technologies that are being designated as bearing 'potential' risks, such as nanotechnologies or synthetic biology.

CONFLICT OF INTEREST

The author declares that he has no conflict of interest.

REFERENCES

1. Ricochet AE (2012) *New Biotechnol* [Epub ahead of print] doi: 10.1016/j.nbt.2012.12.001

Marcel Kuntz is at the Laboratoire de Physiologie Cellulaire Végétale, CNRS/ Université Joseph Fourier/CEA/INRA in Grenoble, France.

E-mail: kuntz@ujf-grenoble.fr

EMBO reports advance online publication XX Month 2013; doi:10.1038/embor.2012.214