25 years of science ethics at Cambridge

Richard Jennings, University of Cambridge, reflects on lessons learned from the teaching of science ethics at one of the UK's leading universities.

In 1990, I gave my first lectures on 'Ethics in Science' at the University of Cambridge. I continued to give these lectures, with variations and developments, of course, for the next 20 years. Five years ago I retired from lecturing, and passed the course on to my colleague Dr Steven John, who still continues the tradition, though now under the heading of 'Philosophy of Science in Practice'.

A gap in the teaching of philosophy of science

At the time I began this series of lectures I had already been lecturing for some ten years on philosophy of science. The two main philosophical areas we covered were epistemology and metaphysics – e.g. how, and to what degree, we can have scientific knowledge; and whether this knowledge tells us how the world really is or simply provides a useful way of making predictions. I began to realise that these lectures did not include any of the ethical issues that arise in science, and I felt that this was a gap that needed to be filled. The lectures that I was giving were addressed to second year undergraduate students in natural science who had decided to study History and Philosophy of Science (HPS) as one of their three options for the second year natural science course. I felt that in addition to these basic philosophical issues, the students would benefit from exposure to the ethical issues that arise in science. Also, by this time, largely due to the influence of various forms of social studies of science, philosophers of science were increasingly aware of the social context in which science was practised.

Classifying ethical issues in science

Looking at the variety of ethical issues that arise in science, I felt there needed to be some way of organising the issues – some typology, or structure. Over time I gathered three large files of ethical issues in science, including various kinds of fraud, the use of animals in experiments, the use of science in military applications, and, politically, how science was and should be funded. I struggled with how to categorise the variety of issues.

I wanted to provide lectures that would be relevant to my audience. My audience consisted of students from the whole spectrum of the natural sciences, from theoretical physics through chemistry and various biological subjects, to experimental psychology. Because my audience was drawn from this spectrum of natural science subjects I decided not to get involved with medical ethics. However, I found that there were a number of issues that were relevant to all sciences. One was the problem of fraud. By the early 1990s the incidence of fraud in science was becoming more evident, and various surveys had been carried out which documented this. I thought it important that young scientists be aware that there is fraud, and I wanted to explain, among other things, that, even if they don't adopt the time saving strategy of making up their empirical results, they should still resist the temptation to present results as better than they are.

Another issue that would affect all of the students was that of funding – how, and on what basis, science is funded. In 1993 the then Conservative government published a White paper, *Realising our potential: a strategy for science, engineering and technology*.[1] This provided a ready source of policy insight which would be of value to the students as they moved on in their careers. It also proved a rich source of quotations, such as "Our specific policies are designed to get maximum value for money from our annual public expenditure of some £6 billion on science and technology." (p.5)

But what I found was that the most pressing ethical issues that arise in science are in the applications of science – and the issues that arise do depend on particular sciences. So, for example, the military uses of science tend to be drawn from physics, while the science used in genetically modified organisms is biological, and the uses of science in advertising are drawn from psychology. Also, during the time I was teaching this course, the animal rights movement became very prominent, and I saw that this was a different kind of problem – not so much a problem in the use of science but in how science is carried out. I was still struggling with the problem of categorising the ethical issues that arise in science.

Three types of ethical issues in science

Over time I began to see a way to classify the ethical issues in science. I saw that fraud was one major kind of ethical issue ('Responsible conduct of research' in the US), and that the ethical issues arising in the application of science were of a different kind. But I also saw that there were ethical issues in how science was carried out. Using animals raised issues, but these were not issues of fraud nor of application of science. It then occurred to me that the use of animals and of human beings were similar in that both involved using sentient beings who could suffer, and that this was a third kind of ethical issue that the scientist may face.

So, in the end, I came up with a tri-partite classification of the kinds of ethical decisions which the scientist may face – those involving fraud, those involving the use of sentient beings, and those involving the application of their scientific knowledge. Policy and funding decisions are not decisions that the scientist makes, but decisions that affect the scientist. Nonetheless, policy and funding decisions (e.g. whether to fund research into renewable energy or into nuclear energy) are still ethical issues. And even though these are not decisions the scientist makes, the scientist still has to decide whether to take the funding and carry out the research.

Dr Richard Jennings is a Director of Studies at the Department of History and Philosophy of Science, University of Cambridge.

Reference

1. HM Government (1993). www.gov.uk/government/publications/realising-our-potential-a-strategy-for-science-engineering-and-technology