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Big Business = Bad Science?

Commercial pressures are distorting academic science and society is not getting the full benefit from the science it is paying for. **Prof. Peter Saunders** and **Dr. Mae-Wan Ho** report on a recent conference in London.

"Corruption of Scientific Integrity? The Commercialisation of Academic Science" was the title of a day long meeting held in the British Academy, 2 May, under the auspices of the Council for Academic Autonomy and the Council for Academic Freedom and Academic Standards. The room was filled to capacity, and people had been turned away.

"Down which river has academic science been sold?" began John Ziman in a provocative mood. Ziman, well known both as a physicist and for his work on the social responsibility of science, argued that there are two kinds of science: "instrumental" and "non-instrumental". The first is generally directed towards practical ends, wealth creation, improving health, preserving the environment, and so on, which are foreseen at the outset. It is also generally proprietary (someone owns the results), local, limited (to foreseen problems and needs), and partisan.

In contrast, the goals of non-instrumental science are not so clearly defined. It lays the foundation for instrumental science, and fulfils other roles as well. It provides trustworthy knowledge of the world and of ourselves, and is a source of wonder. It helps us develop an attitude of critical rationality, reminding us not to accept without questioning, dogmas, theories, 'facts' or authority. It is a source of non-partisan expertise, a necessity in an age when governments require scientific advice in taking many decisions. Non-instrumental science is public, available to all, imaginative, self-critical and disinterested. It has traditionally been largely carried out in universities, though also to some extent in

government sponsored laboratories.

Society needs both kinds of science, but there is an increasing tendency to focus on practical utility to the exclusion of everything else. This leads to a new 'post-academic' culture in which everything, in universities as in industries, is directed towards practical instrumental values. All the UK research councils except PPARC (Particle Physics and Astronomy) have wealth creation at the top of their missions, and Ziman reminded his audience that particle physics too got its big push during and after the war on practical grounds. But post-academic science cannot perform many of the functions society requires of science, and so by treating all science as a saleable commodity, society risks losing many of the benefits.

If non-instrumental science is to survive, Ziman said, we need new structures, funding arrangements, contracts of employment and even a new culture within science itself. He did not suggest what these might be, but told the meeting that developing them must be a high priority for the scientific community.

The second speaker, Professor Nancy Olivieri, described her travails at the Toronto Hospital for Sick Children, part of the University of Toronto. She had been working on Deferiprone, a drug for treating the blood disease thalassaemia. The first results had been encouraging, but the researchers later became concerned about the level of toxicity. The company involved, Apotex, made great efforts to prevent her from informing her patients and other scientists.

The result has been a long legal battle, in which the University has sacked and reinstated her several times. Olivieri acknowledged the support of colleagues and of her union, the Canadian Association of University Teachers (CAUT). She knew of similar cases in other universities, and it was significant that in none of them had the institution supported its staff. She herself had been relatively fortunate, she said, because the company's actions had been overt: they had written her letters and left messages on her answering machine. In many cases, the pressures are covert. You just don't get the grant or the job, and however convinced you may be about the reason, there is no evidence that will stand up in a court.

Olivieri pointed out that to conceal information about possible toxic effects is a violation of the Hippocratic oath, which incorporates the precautionary principle. Contracts that require such information cannot be binding in Canada because they violate the common law provision that a contract may not contain a clause that is against public policy.

Many in the audience were aware of another incident that had been reported in the press shortly before the meeting, and which also involved the University of Toronto. David Healey, a British psycho-pharmacologist, had been offered, and accepted, a post in the Centre for Addiction and Mental Health (CAMH) at the University. In November, he spoke at a conference that was being held at CAMH, and claimed that the highly profitable drug Prozac could cause people to attempt suicide. The job offer was withdrawn within a week. Eli Lilly, the makers of Prozac, is a major funder of CAMH, but both the company and the University denied they exerted any influence on the decision. The Canadian Association of University Teachers has, however, described the affair as "an affront to academic freedom in Canada."

Like the other speakers, Sir David Weatherall, who recently retired from the Institute of

Molecular Medicine, University of Oxford, accepted that there has to be cooperation between universities and industry. This will inevitably lead to problems, which we must try to solve. What John Ziman had called non-instrumental science was also important even from a practical point of view. When medical students were asked which discoveries are the most important for the treatment of disease, over half those they named arose out of 'curiosity based' research. If we concentrate on goal-directed science, we may fail to solve the really important problems.

There is also a problem with clinical research because it is seen as close to market and therefore something that industry, not governments, should pay for. But this can lead to conflicts of interest or bias when the investigators are financially linked to the company. There can be great contractual pressures, and Nancy Olivieri's story was very much the tip of the iceberg.

There is also evidence that someone who has an interest in the outcome is more likely to produce a positive result. The learned journals have been slow to note conflicts of interest. Weatherall described as "not uncommon" a practice known as ghosting, in which scientists working for a company write a paper and pay an outside academic to be the "author".

One of the problems is patent law, which he described as being "in a mess", at least so far as biological material is concerned. What should be patentable is a novel use, but the law is at best not clear on this point. If it is possible to own genes, that can hinder research.

Weatherall stressed the need for safeguards at the interface between universities and industry. There must be reduced pressure for short-term gains and a rationalisation of the patent laws on biological material. Journals should demand statements about possible conflicts of interest. There should be more protection for scientists. This is difficult to achieve because the usual pressure on them is simply a failure to fund them, but it would be a step forward to have review panels to sort out problems. Weatherall also urged that young scientists should be taught how to deal with industry; he felt that both scientists and the universities were naïve, and easily taken advantage of.

The final speaker George Monbiot began by apologising for arriving late; he had been at a meeting on the corporatisation of agriculture, which gave an idea of how pervasive is the problem of corporate takeover. Scientists must join up with the general struggle of society, he admonished.

He reminded the meeting that because the government sees science as a driver of the growth economy, it ties funding more and more to the needs of business. Industry has more and more influence in universities. One way is by giving money to departments that are involved in research that directly affects the company. On the face of it, this might seem natural enough, but when combined with the general shortage of funds, and the presence of many industrialists on Research Council boards, the result is to bias academic research heavily into the direction the companies want. For example, UK universities spend five times as much money on research into oil and gas as into renewable energy sources. Yet you would expect that the latter, being a new field, would require more academic investment than does a mature technology.

The government expects research establishments to attract outside funding, but this makes it difficult for any laboratory such as the Centre for Coastal Research, whose function is largely to monitor the effects of pollution. Corporations are unlikely to fund an institution whose job it is to study the harmful effects of corporations. Monbiot pointed out that the one pollutant that seems to be studied extensively is radon, which happens to be almost the only one that occurs naturally and not as a by-product of industry or agriculture.

In the same way, a disproportionate amount of public money has gone into research in agricultural and biomedical biotechnology. Research into the risks of genetic engineering, which ought to have been high on the agenda of public funding councils, is almost non-existent. Instead, as in the case of Dr. Arpad Pusztai, whose scientific findings go against the interest of corporations, he is sacked and villified.

Monbiot ended by charging that scientists tend to side with the corporations and not with the public. "We need a revolution in the laboratory", he said, though he didn't say how we could go about it. When asked how an independent scientist could work for the public good, all he could advise was to set up shop independently, like the staff of the Centre for Ecology, who were driven out of Edinburgh University for criticising the government and industry.

There were lively interjections from the floor on issues that were hardly touched upon on the platform, especially those that might begin to solve some of the problems aired. For instance, little, if anything, has been done to promote *critical* public understanding of science by those charged with the task, such as the Royal Society's Committee for the Public Understanding of Science (COPUS), nor have they made any effort to engage the public in open dialogue. A public with critical understanding of science is necessary, both for making democratic decisions on science and science-related policies and in ensuring that science is accountable to society. The suppression of scientific dissent by the scientific establishment must be strenuously resisted by all concerned, as it serves to promote the corporate agenda and threatens to stamp out any effective opposition to the corporate take over from within the scientific community. Above all, scientists need to reject biotech patents and to recapture public funding for scientific research that genuinely serves public good.

Unfortunately, the wider issues never got discussed, as the organisers' concerns seem to be too narrowly focussed on the protection of whistle-blowers. The corporate take over of science needs to be tackled at source, in the structure of governance, in the social responsibility and ethics of science. It is not just the individual freedom of scientists to tell the truth that is at stake, important though that is; it is their independence and their freedom to work for public good that must be restored and maintained.

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