

brian cox **view from the top**

# Why science should be properly funded and curiosity-led

The editorial in your last issue [RF 3/6/2009, p2] reported on the Particle Physics—It Matters campaign launched by the Institute of Physics at the end of May. The campaign emphasises the scientific, economic and social benefits delivered by the UK's investment in particle physics, currently £135 million a year.

The track record is certainly impressive. Particle accelerators are ubiquitous in healthcare; they generate isotopes for chemotherapy and imaging and can be used directly in charged particle therapy to treat inoperable cancers.

Novel imaging technologies such as Cern's Medipix silicon sensors promise faster and more detailed X-ray and computerised-tomography scans; neutron beams have the potential to safely dispose of nuclear waste; and of course there is the enormous but practically unquantifiable economic impact of the World Wide Web. Not to mention the constant stream of highly qualified and motivated physics graduates, 72 per cent of whom in a recent survey cited particles and quantum phenomena as being of significant interest in terms of attracting them to study physics at university.

The list is long and the document is glossy. But, as the editorial pointed out, these valuable spin-offs are not and can never be the reasons that we do particle physics. We are particle physicists because we want to learn how the universe works, a motivation that has driven the great majority of paradigm-changing discoveries throughout the history of science.

The reason that the particle physics community feels the need to spell out the spin-off benefits is to respond to the government's increasing focus on "maximising" the economic benefits of science. In practice this means a reduction in funding for the core research programme as money is diverted into areas that can be presented as being apparently better aligned with today's government priorities.

I find the following sentences very difficult to write because I feel as if am stating the bloody obvious, but here goes. Scientific research delivers the greatest benefits to society when it is properly funded and curiosity led. For government to presume that it can increase these benefits by forcing research councils to direct funding towards predefined areas considered likely to benefit UK plc is a dangerous folly that will have the opposite effect. Scientific research is cheap and there-

*Brian Cox is professor of particle physics and Royal Society university research fellow at the University of Manchester.*

fore extremely vulnerable to the funding fluctuations being caused by this refocusing. The science budget is £3.5 billion a year, which is approximately 0.25 per cent of GDP. The Wakeham review noted that 6.4 per cent of UK GDP is generated by physics-based industry. Add chemistry, biotech, engineering, and the rest and the contribution of science to the UK's GDP is enormous. Despite this astonishing value for money, the government believes we can do better.

Explaining the reason for the current upheaval in *The Guardian*, science minister Paul Drayson has written "What has changed is our sense of urgency to use science as the primary means to achieve a healthy and prosperous Britain." But science is already the means by which Britain achieves a significant part of its prosperity, and I have yet to meet anyone outside government who genuinely believes that the increasing focus on economic return will do anything other than lasting damage to our research base and therefore to the UK economy.

**LET ME MAKE A RADICAL** suggestion to government. If you want science to contribute more to UK plc, then increase the science budget and free the scientists to explore. Make the UK the best place in the world to do science, and the best and most productive scientists will come. Free the research councils to fund excellence in research and establish a separate body to gather the fruits of that research and transfer it to UK industry.

If one is optimistic, it is possible to see signs that the new Secretary of State for Business, Innovation and Skills, Peter Mandelson, appreciates this. At the launch of the Science Museum's 100th birthday celebrations last week he said, "Our ability to maintain and develop our strong science base through both applied and a substantial element of fundamental curiosity-driven research, will be essential to our long-term economic success."

He is absolutely correct, and if these words translate into a change of emphasis within government, in particular in renewed support for curiosity-driven research, then the UK's scientists will be much better placed to play their vital role in reshaping and rebuilding the UK economy.

More to say? Email comment@ResearchResearch.com

**"For government to direct funding towards predefined areas considered likely to benefit UK plc is a dangerous folly that will have the opposite effect."**