

THE EXCELLENCE AND OPPORTUNITY WHITE PAPER

Held at the Royal Society on Tuesday 27 February 2001

Sponsored by:

The Office of Science and Technology

In the Chair: **The Rt Hon The Lord Jenkin of Roding**, Chairman, Foundation for Science and Technology

Speakers: **The Lord Sainsbury of Turville**, Minister for Science and Innovation, DTI
Professor Alan Windle FRS, Executive Director, The Cambridge-MIT Institute
Mr Ric Parker, Project Director, Research and Technology, Rolls-Royce plc

LORD SAINSBURY outlined the central features of the Government White Papers "Excellence and Opportunity" and "Opportunity For All". The underlying premiss of the papers was that the UK had shown that it had world class scientific talent and entrepreneurial skills, but that, in a fast changing world, we needed to ensure that they were combined, used and developed. Government itself could not create innovation; that was for individuals who understood and accepted risk. The Government's role was to invest, facilitate and regulate. The White Paper set out the Government's proposals for investment and the means by which it proposed to facilitate the transfer of prolific UK University scientific and technical research into the business world. Regulation was a key factor: scientific advance had always raised questions for society. The BSE and genetic foods controversies had shown the need to convince the public that the health and safety risks had been fully assessed and that public values and concern had been understood. The Government was determined to ensure transparent and open regulation, based on the best scientific advice – the Code of Practice on Scientific Advisory Committees showed the way. There must be a dialogue between the public and scientists if the public were to understand the benefits of scientific advance and scientists the nature of public concerns. He was sure that there was a new spirit of enterprise in Universities – 223 businesses were spun out of them in 1997/8. The White Papers sought to strengthen this spirit, and ensure that all universities had the opportunity to develop enterprise. The Regional Investment Fund should help, but more needed to be done to help SMEs understand technology and take research initiatives – the US experience showed how worthwhile this was.

PROFESSOR WINDLE said that the impact of Government policies was already being felt in Universities. The atmosphere was now reminiscent of the Robbins era of the 60s – it was a good time to be in a University. He wished to concentrate on the Cambridge/MIT initiative with which he was involved.

This was an unprecedented co-operative agreement between the two Universities, the primary aim of which was to create a new generation of innovators. There were programmes of student exchange (25 a year), studies of jobs and curriculum, and integrated research projects focussed on competition and innovation. The problem was how to increase the opportunities for everyone to progress ideas into successful businesses. The university/business interface was crucial; barriers needed to be identified and overcome. Very important was the management of IPR. UK universities tended to see this as a financial benefit for themselves. But (see Robert's Report to the CVCP) successful Universities in the US saw technology transfer as a public benefit. There was, of course, the problem of policing; but too early and too restrictive patent protection could mean missing out on long-term value. The new University Innovation Centres were desirable, but it was important that they should interact constructively with other organisations. A problem was to get the right advice to an inventor who wished to market his project – perhaps an Inventors Agent was needed. The Cambridge/MIT project enabled him to compare UK and US University cultures. In MIT patents and start-ups were more important than published papers – in UK the reverse. The MIT faculty was helped by a clear framework covering such items as consulting, IPR, and conflicts of interest. Also, they earned their academic salary in 9 months; they then had 3 months for the outside world. He welcomed the change in insolvency law. Greater effort still needed to be made to keep professionals up to date – continuing professional or "executive" education. Finally when growth occurred because of University spin-offs and start-ups, it must be physically accommodated – Cambridge, for example, was seizing up.

MR PARKER gave a brief summary of Rolls Royce's position. It was typical of high tech industries; it covered civil aerospace, defence work, marine and energy systems. It had plants in 8 countries with 8000 employees. Investment in research in the UK had to

be justified, but the company believed in research – see its research work and contracts with universities. Achieving excellence in science starts at school. The UK had not done enough. Although the Science Ambassador programme was useful, major handicaps were the requirement on children to choose GCSE subjects at an age when they knew neither their own capabilities nor work opportunities, and the low profile of science. He supported the Government's initiatives in University research, including fundamental research – although the balance between applied and fundamental research required careful watching. But the Government also needed to be aware of the research done in national and industrial laboratories, as well as the drop in research spending by the MOD (85%). Collaboration between universities and businesses was essential, and government support welcomed, but the Government should not be overprescriptive; collaborators should be encouraged to follow their own paths. Patent protection was important, but more important still was rapid exploitation of inventions. Mercenary attitudes by Universities could hinder this. The Government must accept that research (and its commercialization) was a global activity – if the playing field was not level (and it is not – see German public support) it would move to more favoured areas. The tests for the White Paper were (1) did it do enough to keep research by indigenous businesses in the UK; (2) did it do enough to encourage foreign businesses to locate research here; and (3) did it make the UK a good place for engineers and scientists to work in.

A principal theme in the following discussion was the possible misuse of Intellectual Property Rights (IPR), which could inhibit rapid exploitation of inventions, while failing to capture value. Innovation does not happen in isolation; ideas must be discussed and shared. Too much stress on IPR could inhibit this. A climate must be established in which the scientist can share and discuss, but still have a fair share of value at the end of the day. A clear understanding of the distribution of benefits needs to be in place – and this can mean that successful innovators are recognised as conferring public benefit when they become rich (a sprinkling of Ferraris in the carpark is the sign of a entrepreneurially successful university ---). On the other hand, failure to pay sufficient attention to IPR (perhaps a UK failing) means that inventions fail to be commercialized by their inventors, and the economic reward is taken by others. An early decision by EU countries on the "grace period" (3 or 6 months) was essential to avoid uncertainty. Several speakers reinforced the Panel's view that quick exploitation was more important than IPR protection, that there were major disadvantages in taking out protection too early; and that putting a framework – as at MIT – in place before questions of benefits and conflicts of interest arose, was vital.

Further points, which arose, were: -

1. What importance should be attached to regional or local clusters of Businesses? They could be valuable where they existed (e.g. the Cambridge

Network, or the Oxford Brookes links with a trio of local business areas). But it was doubtful if they could be artificially created. Government's role should be to remove barriers to their creation, rather than to create them.

2. It was right to seek to attract inward research investment; but the Government must not neglect the need to support research investment by indigenous companies. Did they realize the need to preserve a proper balance between them? Inward investment would certainly be attracted by a strong University research base – e.g. Boeing went to Sheffield because of the University Technology Centre specializing in metals (and not because of the overpublicized efforts of the RDA). But UK universities insistence on retaining IPRs could be inhibiting. It was difficult for foreign companies to take out full patent protection.
3. Greater effort was needed to overcome the lack of interest in schools in scientific subjects. This was leading to an increasing proportion of engineering and science students at UK Universities coming from abroad. Perhaps such lack of interest was a universal problem (the US leads) but, because of the UKs reliance on high tech exports, it was more urgent here to address it. Better teaching, and curriculum development, would take time to show results.
4. The initiative by the RSE to co-ordinate activity and develop the interface between Universities and businesses was described. The aim was to encourage informed risk taking by good scientists.
5. Some speakers doubted whether there was sufficient underlying enthusiasm from venture capitalists to give long term support to entrepreneurial developments (as J.P.Morgan did to Edison). Often they demanded a quick exit. But there was evidence that good money was now being made from start-up companies. We should soon have a first generation of those who had made their fortunes from start-ups, and who would be motivated to support others as "business angels".

Sir Geoffrey Chipperfield KCB

The discussion was held under the Foundation's Rule that the speakers may be named but those who contribute in the discussion are not. None of the opinions stated are those of the Foundation, since by its nature and constitution, the Foundation is unable to have an opinion.