

costs', which has effectively reduced funds available for the research itself).

The Research Assessment Exercise, RAE, very sensibly introduced as a mechanism for the appropriately competitive distribution of universities' indirect infrastructure costs – which are every bit as real and important as the direct costs of research – has become more bureaucratically burdensome with each iteration. The RAE currently under way, in putatively 'simplified' form, has some bizarre features. The restriction that at most four papers may be submitted, intended to counter the charge of 'salami-slicing' (for which there is no shred of evidence), is silly enough. But the new restriction that no two members of the same department can submit the same (jointly authored) paper is surreal. Imagine the discussion between Watson and Crick, had today's RAE been around then!

Apart from anything else, the sheer cost of the exercise in administrative salaries – both centrally and in individual universities – and faculty time, when the outcome at the overall level of the University has a better than 95% correlation with the University's total value of competitively gathered research money, should be kept in view.

If the RAE is to be continued as a separate enterprise, at very least the process should be made truly simpler. Panels of people recognised for their research excellence and judgment, unimpeded by others added 'for balance', should look at no more than one side of A4 per submitted researcher. Too many officials worry about such a process being 'elitist'. But of course it should be: 'democratically elitist' in the memorable phrase coined by the first Head of the Office of Science and Technology, Sir William Stewart, recognising that elite

performance in science has everything to do with demonstrated excellence and nothing to do with unearned privilege.

Beginning as a chemical engineer, later a theoretical physicist, finally transmogrified to ecologist and epidemiologist, I have spent a lucky and enjoyable life in science. When I started, the world of science was much smaller, with the global population of scientists a few percent of today's. The science community's growth is good; humanity's growing numbers and impacts need ever more understanding of natural processes, from molecules to ecosystems. But the growing scale of the enterprise, nationally and internationally, creates new problems. Then and now, Britain has been a leader, both in advancing the frontiers of knowledge and in how we go about doing it. Today it is hugely important that we think a bit more about the latter.

Intellectual Property - the Challenges for the UK Intellectual Property Office

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It is a great privilege and responsibility to lead the UK Intellectual Property Office (UK-IPO) at a time when Intellectual Property (IP) is more important than it has ever been. It is easy for IP to be seen as a specialist subject, remote from the reality of

business. Nothing could be further from the truth: IP is an essential part of the UK's economic infrastructure; the work done by the UK-IPO in policy, delivery and maintenance of Intellectual Property Rights (IPRs), and awareness raising, is fundamentally an

economic, business-focused task, albeit in a technical and legal form.

For the UK to be making best use of all its IP there must be effective systems and frameworks for formal IPR, ie patents, trade marks, designs

and copyrights. There is also a significant role too for less formal kinds of protection of IP – trade secrets, know-how, forms of tacit knowledge and organisational culture and ‘memory’ all form intellectual ‘property’ or assets of an informal or intangible sort, which add value to individual companies, and provide the foundation for continued economic growth.

Frameworks, in themselves, are not sufficient to deliver success. It is also necessary for organisations to know how to recognise and develop IP assets, and to understand and utilize the formal and informal protection and exploitation possibilities.

One of the conclusions that the UK-IPO has drawn from its own review of its strategy has been that we do not yet have enough understanding of the economic connection between the formal and informal IP systems and the value which firms and individuals derive from their intellectual assets or their IP. We do not have the evidence we need in order to draw robust conclusions about how near the UK is to making best use of its IP nor, as a result, about the most effective measures to help bring this about. We have assumed that IP rights directly promote economic development and have never sought to prove this assumption. We must question this assumption if we are to meet the challenges of increasing globalisation and help UK businesses compete.

In planning for the future it is important that the UK-IPO does not lose sight of the strength of its achievements in delivering high quality services to our existing customers. The UK-IPO is fortunate in having been able to attract and retain people who are both able and highly motivated. We have an excellent reputation for the quality of the IP rights that we deliver. We have also been able to respond better than most other intellectual property offices to growing pressures on the IP system, in

particular to an increase in applications for patents.

Many of the world’s largest patent granting offices are carrying significant backlogs of applications. Increasing backlogs are economically significant for the UK. It is in the UK’s interest for innovative companies, UK universities and research institutions, and individual inventors to have access to an effective patenting system which provides legal certainty for all by granting patents with a high presumption of validity in a reasonably short period of time. The UK-IPO is at the forefront of efforts to address these backlogs and to make the global patent system more fit for purpose.

Another area where we face challenges is copyright. Copyright, which exists in literary works such as musical recordings, film, photographs, software and other elements of creative endeavour, underpins the business models which drive the creative sectors in the UK economy. Two million people are employed in creative jobs and the sectors contribute £60 billion a year – 7.3% – to UK economy. Over the past decade the creative sector has grown at twice the rate of the economy as a whole and is well placed for continued growth as demand for content grows around the world.

Copyright rules are broadly set at EU level, building on an underlying corpus of international conventions that date back to the middle of the 19th century, and further refined within the EU in recent years.

The digital age has brought about huge technological changes that have altered consumer behaviour and challenged the current copyright framework. Creators, rights-holders, businesses, users and consumers, and the legal framework itself are all in dynamic tension. This reflects the fact that rapid technological change means that the options available to creators, to businesses looking to derive value

from creative effort, and to users, are continuing to evolve very rapidly, as is user behaviour in respect of any given technology. The consequence is that, whilst the fundamental principles of copyright remain sound, their application in the digital age means that in certain areas the legal framework may be out of step with the technology and behavioural changes.

Where these changes result in significant shifts in the balance between the various stakeholder groups, then we will need to work with colleagues across government to assess whether action is needed to redress the balance.

We have already started to do more to help combat growing IP crime including strengthening our resources by bringing in police officers with specific expertise in intelligence and proceeds of crime and assets recovery. We are actively involved in a number of other initiatives to help deliver further improvements including a pilot campaign, led by enforcement agencies, which will bring together rights holders, creative industries, and Government bodies and will start to develop ideas to combat counterfeiting and piracy in the lead up to the 2012 Olympics.

The increasingly global nature of counterfeiting and piracy means we must also work across national boundaries to ensure IPRs are enforced around the world. Helping developing countries build their capacity to enforce IPR legislation is essential if we are to reduce global counterfeiting and piracy. We have therefore been working in partnership with governments in some of the major emerging economies including China and Brazil on this issue.

This is just a taste of what we are doing and the challenges that we are facing. It is, to say the least, an interesting and exciting time to be the head of the UK-IPO.