

New innovation/ the innovation system

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The climate for commercializing ideas in the UK is changing to promote high-tech growth, says Professor Birgitte Andersen, Director of Big Innovation Centre

Open innovation, ecosystems and an enterprising state

The climate for commercializing ideas in the UK has become more ambitious, bolder and more enterprising. With the creation of a series of technology and innovation centres in the UK – called Catapult centres – backed by more than £1bn over the next few years, the government now has a major opportunity to catalyse a wave of new innovation, crucial to creating the UK's future industries. In addition to these new players in the innovation landscape, even some of our oldest institutions – the universities and the intellectual property (IP) rights system – will also be changing their game.

This chapter is focused on the future, arguing that 'open innovation', an ecosystem perspective and an enterprising state are the only way to realize a new paradigm for commercializing ideas in the UK in order to successfully promote high-tech growth.

Government policy has moved from the linear model of science policy in the 1950s–60s, which primarily focused on supporting the basic research base, to technology policy in the 1970s and 1980s with clear utilitarian – often engineering – perspectives. More recently, innovation policy in the 1990s–2000s incorporated a knowledge transfer mission through building institutions, eg technology transfer offices in universities and tighter intellectual property (IP) enforcement.

However, a new focus for innovation policy is emerging post-2010. This policy takes an 'ecosystem' perspective on innovation: one that recognizes that UK businesses, universities, education and financial institutions need to be working together much more effectively if they are to 'co-create' economic growth.¹ In this context, maintaining traditional tax cuts as a key instrument (assuming that these create more investment in R&D, which automatically translates into commercialization, markets and growth) is clearly a controversial argument.

The new focus is on open innovation, by which I mean close collaboration by all stakeholders in addressing a business and social opportunity or challenge.² These opportunities range from the development of a new product through to larger socio-economic issues such as green energy, health or crime. Stakeholders would clearly include businesses and citizens, but also universities, banks and other intermediate organizations, engaging with each other through multiple channels and pooling their internal resources, including knowledge, finance, people, markets, big data, and IP. This approach to open innovation is more than simply sharing risk and reward; it encapsulates the integration of the entire innovation ecosystem, and is about co-innovating new markets and more effective business models which would not exist otherwise.

UK Catapult centres: raising the potential of the UK innovation ecosystem

The Catapult centres which have been announced by the government to date are:

- cell therapy;
- connected digital economy;
- future cities;
- high value manufacturing;
- offshore renewable energy;
- satellite applications;
- transport systems.

All the Catapults will be operational in 2013.

To ensure that the new Catapult centres play their full role in the open innovation ecosystem, the Big Innovation Centre was commissioned to establish benchmarks for Catapult Centre performance.³ It did so by learning from international best practice through a detailed survey of existing similar-style European Technology and Innovation Centres.⁴ The survey examined the role these centres play in moving ideas from concept to commercialization in their own innovation ecosystems, and then drew conclusions for the UK context.

The research indicated that, although scale is important, centre performance should not be assessed merely through traditional measures such as turnover and size, but through the real difference they make as catalysts for building new markets, innovative sectors, and places.

Drawing on the international evidence, the UK Catapult centres can de-risk innovation and help businesses go beyond their existing capabilities or enhance the use of their resources in a variety of ways:

- They must be 'horizon scanners', identifying new technological opportunities.
- They must be multifunctional in their provision of services, supporting stakeholders who take concepts to commercialization in the innovation

process. This includes new competencies or specialized skills, applied R&D, and testing facilities, as well as providing access to investment networks, other consultancy and perhaps even sales.

- They must also find ways to speed up the flow of knowledge, ideas, resources, IP and skills within their target sectors, by finding appropriate platforms to best connect external partners.

And, perhaps most importantly, just like their European counterparts, the UK Catapults must be a core element of the national future growth policy. For example, Catapults could be integrated into the government's ambitious infrastructure investment plans and provide an essential element in the UK knowledge infrastructure for manufacturing, transport, energy, cities, communication, and more.

Only then can the UK build the most globally sophisticated national network of technology and innovation centres.

Intellectual property reform: unleashing open innovation growth and digital entrepreneurship

The government's ongoing programme of intellectual property reform demonstrates another area where the climate for commercializing ideas is changing, and it is now essential that the government pushes ahead with their plans to implement 'exceptions and limitations' to copyrights and a more flexible intellectual property rights (IPR) regime. It must do so to unleash a new wave of open innovation growth and digital entrepreneurship.

In the 21st century, many firms are adopting more open, and less exclusive, approaches to IP management, moving to greater sharing of ideas, learning and feedback, and joint standards-setting.⁵ They acknowledge that innovation and commercial value are primarily created from collaborative and coordinated effort across content producers, distributors and users, and there is a focus on growing the sector for all rather than grabbing a bigger slice of current revenue for themselves.

Paradoxically, government have made patents and copyright more exclusive and stronger over recent decades. Rather than celebrating the dynamism of, for example, new and novel entrepreneurial search engines, digital platforms, aggregators and online registers, too often those with disruptive business models have been hounded through the IP system for upsetting the dominant position of existing market actors. In an era with an increasing use of open source communities, creative commons licences and patent pools, this must change.

Moreover, 'big data' are woven into every sector and function in the global economy like other essential factors of production, such as hard capital, labour and energy. Governments and businesses that understand how to build business models that combine their data with other networks of public and private data will hold the competitive edge. To fully benefit from the enormous potential of big data, we need to revolutionize the way we legislate IP. I suggest the creation of a new IP manifesto proposing a new norm for regulating IP, as 'exceptions and limitations' is not enough to create a truly free space for individuals to innovate in.

From open science to open innovation and how UK businesses can raise the potential of the academic research base

One area where IP and access reform will be crucial is in linking both the science base and academia and organizations. Catapult centres are an important player here, but the broader IP system can contribute. Just as more collaboration is at the heart of an innovation ecosystem perspective, wider access to research findings – and to the academics who produce them – must be encouraged.

As part of that encouragement, moves by the Higher Education Funding Council for England (HEFCE) to look at new models for ‘open access’ are to be welcomed. There must be a period of experimentation with new platforms, coordinating mechanisms and alternative business models to provide clearer evidence of what works, and to overcome many of the technical challenges associated with the discoverability of open access content.⁶

While the important role of universities’ technology transfer offices (TTOs) is widely understood, greater insight into how businesses want to access the benefits of research through collaboration with academics is also crucial. To that end, the Intellectual Property Office (IPO) is supporting a national survey of 200 companies which have collaborated with 40 different UK universities.⁷ Key findings from this survey (conducted by the Big Innovation Centre) indicate that:

- A majority of UK businesses think that the traditional ‘knowledge transfer’ mission of their national universities works very well, especially in relation to access to talented academics, but about half believe that open innovation, co-creation and interactive learning capabilities should be developed.
- A possible consequence of this is that almost three-quarters of the surveyed businesses report that collaboration with UK universities around the development of new product or process is not working well, and neither is the universities’ ability to supply location advantages to firms, and vice versa.
- Such open innovation relationships are kick-started when academics are empowered.

A greater focus on understanding the role that companies and universities play as collaborators in an open innovation system is required in future policies and management of universities and businesses, as well as stronger incentives on both sides to facilitate such open innovation.

Conclusion

To improve the commercialization of ideas and promote high-tech growth in the UK, we must embrace a perspective that focuses on open innovation, innovation ecosystems and an enterprising state. We must test new open innovation models

for businesses, universities, and open access research. We must acknowledge that some will not succeed, and not be intimidated by that possibility. We must aim for excellence.

This is an ambitious and challenging agenda for UK growth policy, but we must not shy away from policy which is sufficiently bold and has enough vision to create the capability we need to unleash new growth, jobs, competitiveness and improved welfare.

Notes

- 1 Andersen, B, Brinkley, I and Hutton, W (2011) Building the UK a Global Innovation Hub by 2025: How business, finance and an enterprising state can transform the UK, Big Innovation Centre, September
- 2 The open innovation concept, more narrowly defined, was coined by Henry Chesbrough arguing that firms can and should use external ideas as well as internal ideas – and internal and external paths to market – to advance their technology. Procter & Gamble (P&G) was regarded a first mover of open innovation through their ‘Connect and Develop’ (C&D) programme, where they managed to improve research productivity dramatically by relying on global collaboration with parties outside of the company via their platform.
- 3 Andersen, B and Le Blanc, S (2013) Catapult to Success: Be Ambitious, Bold and Enterprising – Learning from European technology and innovation centres, Big Innovation Centre, January
- 4 Evidence was collected through an online questionnaire addressed to 125 individual innovation centres and similar bodies in Europe. Responses were received from 32 centres (representing 26 per cent of the total) across all national initiatives in Europe: 61 German Fraunhofer Institutes, 34 French Carnot Centres, 7 Organizations for Applied Scientific Research (TNOs) in the Netherlands, 1 Finnish Technical Research Centre (VTT), 6 Finnish Funding Agency for Technology and Innovation (SHOK-TEKES) centres, 9 Danish Advanced Technology Group (GTS), 1 Norwegian Foundation for Scientific and Industrial Research (SINTEF), 6 Spanish Tecalia.
- 5 Andersen, B, Rosli, A, Rossi, F and Yangsap, W (2012) Intellectual property governance in ICT firms: strategic value seeking through proprietary and non-proprietary IP transactions, *International Journal of Intellectual Property Management*, 5(1), 19–38; Andersen, B and Rossi, F (2011) Intellectual asset management: strategies for diverse innovations, in *Intellectual Assets and Innovation: The SME Dimension*, OECD (Commissioned by the Department of Business, Innovation and Skills)
- 6 De Silva, M and Montgomery, J (2013) Response to HEFCE Pre-consultation on Open Access and Submissions to the Research Excellence Framework post-2014, Big Innovation Centre, March
- 7 Andersen, B (2013), Presentation ‘Catalysing UK Businesses: When Academics are Empowered, Enterprising and Innovative’, The Oxford Future of Science Conference: Rigour and Openness in 21st Century Science, Oxford University, April (Full report by Andersen, De Silva and Levy, forthcoming July 2013, Big Innovation Centre and the Intellectual Property Office)

As Director of the Big Innovation Centre, Birgitte Andersen is leading it as a London-based open innovation and investment hub, which includes a dozen global companies and world-class universities. She also leads the development of practical policy proposals to rebalance and grow the UK economy. Birgitte has an international reputation as an expert in business innovation and technology policy, as well as IPR. She is a professor at Lancaster University.

Her work is regularly published in peer-reviewed journals, discussed in the media and highlighted in national and international government reports, including the UN World Development Report. Birgitte has directed several pan-EU projects on innovation, and advised economists and policy makers of national governments in and beyond Europe (including the OECD, UN and WIPO). She is used by the courts as an expert defence witness. Birgitte is also appointed as a rapporteur for the EU Expert Group on Knowledge Transfer and Open Innovation, set up by DG Research and Innovation of the European Commission.