Institution: University of Sussex

Unit of Assessment: UoA 19 Business and Management

Title of case study: Revealing 'Hidden Innovation' to policy-makers led to changes in the UK government's innovation policy

1. Summary of the impact

Research by SPRU – Science and Technology Policy Research – at the University of Sussex changed the way in which government records and supports innovative activities and led to new policy measures, including the Innovation Index, the Public Services Innovation Laboratory, the Whitehall Innovation Hub and the Government Annual Innovation Report. These policy initiatives address SPRU's research findings that innovation was previously only narrowly conceived in policy, being seen as an activity driven by commercial R&D. The new policies, which generate benefits in both business and the public sector, are underpinned by SPRU research that revealed areas of innovation in the economy previously ignored, for example in innovation in the public sector and in the creative industries.

2. Underpinning research

In 2006, SPRU researchers were invited by the National Endowment for Science Technology and the Arts (Nesta) to co-produce a report [see Section 3, R6] to underpin Nesta's new research programme in its aim to influence the UK government's innovation policy. The SPRU team, led by Paul Nightingale (Senior Research Fellow/Senior Lecturer) and Virginia Acha (Lecturer, left Sussex in 2006), included Mike Hobday (Professor, left SPRU in 2010), Pari Patel (Senior Research Fellow), Alistair Scott (Research Fellow, left SPRU in 2006), Michael Hopkins (Research Fellow/Senior Lecturer) and Caitriona McLeish (Research Fellow). The report made the key argument that 'A gap has opened up between the practice, the theory, the measurement (and subsequently policies) of innovation...and it can produce a misleading view of national innovative performance' (Nesta 2006: 17). The report called for new metrics of innovation in order to better support new innovation policies and enable innovation to be better exploited across the whole UK economy. The term 'Hidden Innovation' was coined in the report (Nesta 2006: 5) to emphasise how existing metrics overlooked innovations in many contexts.

The report drew on a substantial body of published academic research as well as new research by SPRU authors (at the time awaiting publication in academic journals). Some illustrative SPRU research contributions that fed into the 2006 Nesta report on 'The Innovation Gap' are described here.

In 1995/1996, Diana Hicks (Professor, at SPRU until 1999) and Sylvan Katz (Research Fellow, left SPRU in 2002) published research [R1, R2] that revealed the highly distributed nature of scientific research in the UK economy and beyond – indicating that firms *do* in fact engage in basic science and showing that significant amounts of research is hospital-based (both findings were revealed by tracking academic publications). Hicks and Katz (1996) used the term the 'hidden research system' to reflect the neglected status of hospitals in the UK science-policy literature. This work influenced SPRU research studying the emergence of genetic testing services in the NHS (see Hopkins 2006 [R4], Hopkins and Nightingale 2006 [R3]). Hopkins and Nightingale reveal how, during the second half of the twentieth century, three technologies (based on advances in cytogenetics, biochemical genetics and molecular genetics) supported the development of hundreds of distinct genetic testing services in the UK's hospitals. Importantly, these diagnostic service innovations, developed by hospital staff, are not detected by the traditional indicators of innovative activity used to support policy formulation, e.g. the European Commission's R&D scoreboard (described in Nesta 2006: 12), which counts, *inter alia*, patents, new product sales and venture capital investments. The observation that service innovations within the NHS are 'Hidden Innovations', not detected by standard metrics, is a key finding that supported impacts in UK government innovation policy through publication of a case study in the report (Nesta 2006: 24–

25). A further case study drew on SPRU research (later published as Hopkins *et al*. 2011 [R5]) showing how a series of UK engineering firms contribute to design innovations in work for their UK and international clients, but that the value they create for clients is not captured by innovation metrics such as the Department of Trade and Industry's Value-Added Score Board (Nesta 2006: 26–27). These case studies became widely used exemplars of 'Hidden Innovation' in Nesta's work to influence government innovation policy, as discussed in the impact section.

3. References to the research

R1 Hicks, D. (1995) 'Published papers, tacit competencies and corporate management of the public/private character of knowledge', *Industrial and Corporate Change*, 4(2): 401–424.

R2 Hicks, D. and Katz, J.S. (1996) 'Hospitals: the hidden research system', *Science and Public Policy*, 23(5): 297–304.

R3 Hopkins, M..M. and Nightingale, P. (2006) 'Strategic risk-management using complementary assets: organizational capabilities and the commercialisation of human genetic testing in the UK', *Research Policy*, 35(3): 355–374.

R4 Hopkins, M.M. (2006) 'The hidden research system: the evolution of cytogenetic testing in the National Health Service', *Science as Culture*, 15(3): 253–276.

R5 Hopkins, M.M., Tidd, J., Nightingale, P. and Miller, R. (2011) 'Generative and degenerative interactions: positive and negative dynamics of open, user-centric innovation in technology and engineering consultancies', *R&D Management*, 41(1): 44–60.

R6 Nesta (2006) *The Innovation Gap*. London: Nesta. Available at: http://www.nesta.org.uk/library/documents/Nesta%20Report%20TIG.pdf

Outputs can be supplied by the University on request.

4. Details of the impact

SPRU research for Nesta directly influenced the policy agenda outlined by the Department for Innovation, Universities and Skills in March 2008 in the UK government White Paper *Innovation Nation* [see Section 5, C1]. From the first page of the executive summary for *Innovation Nation* (2008) the new emphasis of government innovation policy is set forth as finding and supporting 'Hidden Innovation' – a term that had become widely disseminated in Nesta policy reports by this time [C2]. The *Innovation Nation* White Paper emphasises how government policy seeks to identify innovation outside those R&D-intensive sectors traditionally associated with innovation (e.g. manufacturing sectors such as aerospace and pharmaceuticals), and to support hidden innovation in a wider range of industries – including services and creative industries – and an emphasis on supporting innovation in the public sector [C1 cites the Innovation Gap report on p.14]. A number of initiatives, influenced by SPRU's research, resulted from the White Paper:

- The Innovation Index and its annual report (2009–present) provides a new set of metrics for measuring and valuing innovative activities, giving government broader measures on the productive sectors of the economy based on investment in intangible assets rather than traditional R&D spending measures (thus capturing investment in R&D spending, advertising, market research, skills and training, design, software development etc.).
- The Public Services Innovation Laboratory (2008–present) supports new methods for uncovering, stimulating, incubating and evaluating innovations in public services through a broad range of initiatives, hosted at Nesta.
- The Whitehall Innovation Hub (2008–2010) was designed to create a forum for the top 200 civil servants to develop strategies and discuss implementation plans to transform government and open up possibilities for public-service innovation and promote the dissemination of best practice.

- The *Government Annual Innovation Report* (2008–present) is a summary of government progress in supporting the agenda set out in *Innovation Nation*.

Dr Michael Harris (former Research Director of Innovation Policy at Nesta) states that 'the Innovation White Paper announces the Innovation Index including DIUS and BERR as partners, the Public Services Innovation Laboratory, the Whitehall Innovation Hub, and a Government Annual Innovation Report – all of which are unlikely to have happened (and in their actual form) without the SPRU work. More broadly (which is to say less directly but still in the same vein), there is the support for some sectors that has continued in line with the much broader recognition of innovation, for example the creative industry tax reliefs' [C3].

Harris' latter point on industry tax relief refers to HMRC tax relief on production costs from animation and high-end TV programmes introduced in 2013, and a proposed tax relief on video games (currently delayed by EC state aid provisions) – as distinct from tax relief on UK film production, which predates 'Hidden Innovation'. As indication of the potential value of these new reliefs, the more-established film tax relief is associated with growth of the industry (70 per cent of which is now dependent on the relief) and is said to be worth £600m per year to the film industry [C4].

The policy impacts were achieved as a result of the dissemination of the Hidden Innovation concept and the continued development of an empirical evidence base by Nesta in the period 2006–2008. In particular, Nesta used the SPRU case studies illustrated in the previous section as exemplars of hidden innovation, for example at an OECD workshop on 'Hidden Innovation' [C5]. As a direct result of SPRU's contribution to the Innovation Gap report, Nesta also funded a series of policy reports further exploring Hidden Innovation [C2], which identify and characterise forms of 'Hidden Innovation' (2007), recognise innovation in sectors previously overlooked by policy e.g. *Hidden Innovation in the Creative Industries* (2008), and chart the importance of hidden user innovation by *The New Inventors* (2008). The link with the SPRU research remains strong – for example, Nesta's (2008) policy report on '*Total Innovation*' still echoes clearly the SPRU research findings (see quote from Innovation Gap in the research section above) but goes further in demonstrating a receptive policy community: 'Traditional indictors of innovation are based largely on a model that is increasingly irrelevant...many forms of innovation are neglected by this traditional linear model...Recently policy has begun to recognise this hidden innovation' [C6 Nesta (2008: 5)]. The concept of hidden innovation remains a theme driving the analysis of this stream of Nesta reports (see Nesta's *China 2013* report, albeit October 2013 is outside the REF impact period) and Nesta staff estimate at least £2 million of policy initiatives such as the on-going *Innovation Index* studies [C7] have been funded by Nesta as a result of SPRU's work on 'Hidden Innovation' [C8].

The cumulative result of the SPRU research, as well as the series of Nesta projects that followed on the theme of Hidden Innovation, have together achieved a substantial shift in the framing of innovation policy in the UK, such that innovation is now understood to occur in more diverse forms and locations, and policy can now be developed to foster this. The text of the *Innovation Nation* White Paper makes clear the link to Nesta's work, acknowledging that 'Hidden Innovation is increasingly important to the UK economy' [C1 *Innovation Nation* (2008: 14)] and the executive summary cites the themes of Nesta's reports on Hidden Innovation in motivating the policy measures it sets out, as follows: 'Other sources of innovation include the creative application of tried and tested technologies and the role of design in developing innovative products and services. Innovation is also not restricted to the private sector – increasingly the public sector is called upon (often in partnership with the private and third sectors) to innovate in design and delivery of public services. ... Users are also increasingly innovating independently or in collaboration with business or in the co-creation of public services. Government policy needs to recognise these new sources of innovation and in particular develop new instruments that drive demand for innovation as well as its supply' [C1 *Innovation Nation* (2008: 4–5)]. This high level of influence on policy is an achievement acknowledged publicly by Nesta in its own presentation of its work [C9].

Dr. Michael Harris (formerly of Nesta) recently wrote 'SPRU's leading work on this agenda was

highly influential on Nesta's work but also informed significantly the (then) Department for Universities, Industry and Skills White Paper, *Innovation Nation*, in evidencing and promoting a much broader and more diverse understanding of innovation across the private and public sectors. ... This represented a strong example of synthesising, translating and disseminating many years of innovation research to the policy community (especially through the concept of "hidden innovation"), such that policy-makers' understanding around innovation has developed as a result, including government's recognition of innovation in the public sector and within government itself' [C2].

5. Sources to corroborate the impact

C1 http://www.bis.gov.uk/assets/BISCore/corporate/MigratedD/ec_group/18-08-C_b.pdf
Innovation Nation is a UK Government White Paper on innovation policy, discussing a raft of policies for the support innovation across the UK economy. Recognising innovation beyond traditional R&D-intensive industries was a landmark change in UK innovation policy, and the report acknowledges the concept of 'Hidden Innovation' as being part of this reframing on the first page of the executive summary, which also discusses innovation as occurring in the public sector. On page 7, the report sets out the government's broad support for Nesta's *Innovation Index* – a broader measure for innovation, justified by the need to capture a wider range of innovative activities than previously.

C2 http://www.nesta.org.uk/publications
This link provides access to Nesta policy reports including '*Hidden Innovation*' (2007) and *Hidden Innovation in the Creative Industries* (2008), the *'New Inventors*' (2008) and '*Total Innovation*' (2008) as well as others, up to '*China's Absorptive State*' (2013) which continue to use the term 'Hidden Innovation'.

C3 Email (16 October 2013) from Michael Harris, former Research Director of Innovation Policy at Nesta.

C4 http://www.publications.parliament.uk/pa/cm201314/cmselect/cmcumeds/674/67408.htm
This is an extract from a select committee report detailing the benefits of the film tax credit. This is used here as an illustration of the scale of benefits that tax credits generate for industry in general.

C5/C8 http://www.oecd.org/sti/inno/oecdworkshoponhiddeninnovation29october2007.htm
This link shows that the slides that Nesta presented to the OECD workshop prominently feature SPRU's examples of genetic testing and engineering case studies, and continues the argument made in SPRU's report for Nesta on 'the Innovation Gap'.

C6 http://www.nesta.org.uk/library/documents/Report11%20-%20Total%20Innovation%20v7.pdf
Total Innovation is a Nesta policy report published in 2008. On the first page of the executive summary this acknowledges the importance of the *Innovation Gap* report in developing the concept of Hidden Innovation, which is then used as a key concept for the *Total Innovation* report's subsequent analysis. This is cited here as just one example of a series of Nesta reports that built on SPRU research that fed into the *Innovation Gap*.

C7 http://www.nesta.org.uk/publications/reports/assets/features/the_innovation_index
The *Innovation Index* website shows that the *Innovation Index* was established as a novel metric of innovation to support government policy, and has run several times annually since the pilot run in 2009.

C8 Email from Nesta staff

C9 http://www.nesta.org.uk/library/documents/A_Brief_History_of_NESTA.pdf
This is an 8-page history of Nesta's work since its foundation in 1998, produced by Nesta. On page 5 the '*Innovation Gap*' report, authored by SPRU researchers, is described as being Nesta's first innovation policy report, and that this had been 'influential' in leading government to develop a broader framing for innovation policy.