

## Transforming Innovation Policy

Keynote address at **Edges, Horizons, and Transformations: The Future of Innovation Policy**

Organized by the Science Policy Research Unit (SPRU), University of Sussex

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### Introduction:

As the new Director of SPRU, I'm delighted to welcome you to this event today where we hope to grapple with the future of innovation policy in the UK, Europe and perhaps globally in the decades to come. We need to get innovation policy out of the ghetto of a too narrow focus on science and technology, whilst also being realistic about both the opportunities and limitation of innovation.

Innovation policy is about the central issues of our time. It is about progress, the production of social value as well as democracy, gender, inequality, jobs and economic growth. It is also about the future of our energy, transport and digital infrastructures as well as the future of our healthcare and education systems. Innovation policy is hard work; it involves conflicts and political power struggles and is always facing difficult trade-offs between interests and perspectives of various groups which cannot be harmonized. Today I want to share with you where I see SPRU's place in these important debates as we rapidly approach our 50<sup>th</sup> anniversary in 2016. We organized this event to present and discuss a new strategic direction for Innovation Policy and for SPRU. Both have always been closely connected in SPRU's history and will continue to be so in the future.

Having come over to the UK from the Netherlands in January of this year, I've been impressed by what I found at SPRU and in the UK, among other things: the fluid nature of the relationships between the political and the academic, the openness to working with friends across academia within and beyond the UK, and finally the commitment at SPRU and Sussex to encourage interdisciplinary and transdisciplinary work. I believe that SPRU and the UK are well placed to transform innovation policy; but before I talk about this, let me say a few words about myself as a newcomer to the UK.

I am a historian by background and have spent my career working at the junction and frontier of various academic fields and disciplines; providing a long term perspective on policy issues; developing new appreciative theories and concepts, and nurturing large scale, creative collaborations to help transform both academic understanding and policy practices.<sup>2</sup> This is what gives me pleasure: contributing to the development of new ideas, bringing history into the mix,

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<sup>1</sup> I would like to acknowledge inputs of and various valuable discussions with a wide range of colleagues at SPRU and Arie Rip who visited SPRU when this speech was under construction.

<sup>2</sup> Most recently, I co-lead two major collaborative projects. One with some 300 academics on the History and Future of European integration from a technological perspective (see [www.makeeurope.eu](http://www.makeeurope.eu)), and a second one on Transitions to Sustainable Development, which not only inspired the development of an entire new academic field, transition studies, but also contributed directly to several new Dutch policies at local as well as national and even European and global levels, and inspired the emergence of a new social movement in the Netherlands ([www.sustainabilitytransitions.com](http://www.sustainabilitytransitions.com))

crossing boundaries and addressing real world problems and for this reason, I feel very much at home in SPRU.

### The world in transition

As a historian, and transition expert, I'm used to working with long timescales. At the same time, I recognise that there are a number of key milestones in the immediate future which mean that this event, I hope, is particularly well timed:

Next week, we'll see President Juncker and his new Commission take up their new desks in Brussels. This is particularly interesting since we have seen mixed signals. On the one hand, through initiatives such as Horizon 2020, the Commission wants innovation to address a number of well-chosen grand challenges<sup>3</sup> and the notion of Responsible Research and Innovation has been given more prominence in policy making. On the other hand, many policies are still based on an old supply driven innovation model, which takes support for R&D as the main entry point for policy making without thinking more creatively about the broader suite of innovation policies available. We wait to see how innovation policy will be shaped in Europe under this new leadership.

Six weeks from now as part of the Autumn Statement, the UK Government is expected to release its strategy for science and innovation. And eight months from now, we will face an extremely tight general election here in the UK. Whilst innovation policy may struggle to knock the rise of UKIP and immigration off the newspaper's front pages, this is still an important opportunity for our political parties to think more strategically about innovation. In this context, we certainly look forward to hearing from Liam Byrne later today on Labour's vision for innovation in this country.

But beyond these immediate political milestones, I believe that we should look more deeply at the shifts in the context for innovation. I would argue that the modern world is in transition. How do we know this is the case?

I could point to the persistent economic crises, the fact that new generations are not looking forward anymore to an improved situation, but one in which they will be worse off than their parents. I could also refer to the steep rise in inequality, and the squeeze of the middle class out of jobs due, in part, to a digital revolution which has just started and whose massive impact is still ahead of us. Today we also see the slow but steady hollowing out of the traditional powers of the nation-state, with many of today's most pressing challenges beyond the capacity of any national innovation policy. Finally, I could point to the movement of the centre of the world away from the West and the steep growth of new type of consumer markets in new megacities around the world, of which Charles Leadbeater might say more about.

These trends are all crucial indicators of the world in transition. On top of this we are facing a number of persistent problems. The modern way of provisioning our basic needs is not sustainable in the long run, and is already causing climate change on an unprecedented scale. It is clear that we cannot globalize our current ways of providing food, energy, mobility, healthcare, and water. These

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<sup>3</sup> The European Union is focusing on six Societal Challenges: Health, demographic change and wellbeing; Food security, sustainable agriculture, marine and maritime research and the bio-economy; Secure, clean and efficient energy; Smart, green and integrated transport; Climate action, resource efficiency and raw materials; Inclusive, innovative and secure societies.

problems stay with us when economic growth returns, and they will likely worsen as time progresses – risking even more climate change and profound societal turmoil, tensions and war. They also cannot be solved by optimizing current scientific and technological solutions, burning more fossil fuels, investing more money in high-tech medicine, nor by globalizing value chains and continuing to promote car-based mobility patterns. We need to move away from a costly “business as usual approach” to these persistent problems. Instead we at SPRU feel that it is time to address these issues head on through an innovation policy lens which aims at transformative change.<sup>4</sup>

#### A new lens for innovation policy

Why through innovation policy? There are two very good reasons for this. First it is clear that science and technology are hugely implicated in all these persistent problems. Second, our modern society was and still is built upon the idea that promoting innovation is extremely positive and will bring many wonderful things, even when it is clear that there is a darker side to innovation too. It can lead to massive unemployment, more violence, the further destruction of our environment and other large scale impacts, for example for our privacy.

Too often policy is based on the understanding that entrepreneurial activities and high-tech firms should just be stimulated and encouraged, whatever the consequences. The negative impacts of innovation then need to be solved through governmental regulation and other compensatory measures, retrospectively. This is the social contract of modernity in which the market is responsible for innovation, and generating economic growth, while the state is put in place to distribute some of the benefits and manage the risks, if necessary. People are mainly seen as mass-consumers who should decide which products are best through buying them, and as voters who should bring political parties to power who will defend their interests.

We are in need of a new social contract for a Second Modernity in which we keep our ability to innovate, yet also find new ways of directing and embedding innovations into socially desirable directions from the outset. It is not only firms and the state who are key stakeholders for a future innovation policy, but also consumers as users need to be involved, as well as citizens and civil society.

If we accept that the core problems of the world in transition can and should be addressed through innovation policies, the next question is what such as policies should look like? Based on on-going work within SPRU and beyond, I believe innovation policy should do two interrelated things: stimulate investment and provide direction.

It should stimulate investment throughout the entire innovation chain, from invention, to innovation and diffusion. We need to think far beyond support for R&D and the prioritisation of specific research avenues. What is necessary is support for the constant tinkering and re-making of systems, and the development of new services and organisational models to meet social as well as economic challenges. We need to ensure that all actors benefit, not only firms but also the state and the public.<sup>5</sup> As SPRU’s Mariana Mazzucato has emphasized in her work on the *Entrepreneurial State*, it is

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<sup>4</sup> Mariana Mazzucato and Carlota Perez, *Innovation as Growth Policy: the challenge for Europe*, SPRU working paper series 2014-13, July 2014.

<sup>5</sup> *The Innovation Gap. Why policy needs to reflect the reality of innovation in the UK*, NESTA Research Report, October 2006.

essential to see that innovation generates highly unequal risks and benefits to the different actors involved, and I'm sure we'll hear more about this from Mariana this afternoon.<sup>6</sup>

Secondly it should provide direction to innovation, which is not always easy. It should begin with the opening up of innovation portfolios, allowing consideration of a greater diversity of options, without falling back all-too-easily on polarised "for" or "against" arguments. Instead, innovation policy should allow for more exploration and experimentation outside the narrow boundaries often set by incumbents, with scientific advice based on a wider range of perspectives, and nurture a policy making process which provides an opportunity for various stakeholders to challenge dominant and less-dominant views. Innovation policy involves fundamental political questions, which as Andy Stirling argues, present crucial areas for democratic deliberation. So innovation also has the potential to reinvigorate the future of our fragile democracies – a critical theme which Andy may expand upon later today.<sup>7</sup>

### Transforming Innovation Policy

How then can innovation policy help to provide direction? I would like to propose four options – not as a comprehensive set but as a way to fire the imagination: firstly, **foresight**; second, **experimentation**; thirdly, through **innovative institutions**, and fourthly, **fusing a wider range of expertise**.

Firstly, let's take **foresight**: SPRU was a pioneer in foresight studies, thanks to the work of Ben Martin and others.<sup>8</sup> There is no doubt that foresight is difficult. The non-linear nature of technical change means new developments will inevitably occur in ways which could not be foreseen. To overcome this problem, foresight should be organized as a continuous effort across the entire innovation chain from invention to wider diffusion – involving both social as much as technical processes. We need to use foresight more effectively as an instrument for giving voice to a wide range of expectations and aspirations about the future and for orientating and directing investment decisions. In the past year, there has been much emphasis on foresight capacity and horizon scanning in the UK, and we are yet to see how the new Chief Scientific Adviser, Mark Walport will shape the Foresight function over his term. I'll leave it to Sandy Thomas to reflect on these issues in her remarks.

Secondly, we need to **experiment** more and on a larger scale with new emerging technologies. There is no lack of demonstration projects and pilots with new technologies. However, they are often organized in an ad-hoc fashion, focus on technical challenges, and then leave it to the market to commercialize and standardize solutions. They are often not geared towards exploring and exploiting how new technologies present opportunities for addressing societal challenges, and then how to capture value in a later stage of the innovation chain.<sup>9</sup> We need to allow for bigger

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<sup>6</sup> Mariana Mazzucato, *The Entrepreneurial State: debunking private vs. public sector myths*, Anthem Press, London, UK, 2013.

<sup>7</sup> Andy Stirling, 'Making choices in the face of uncertainty', in *Themed Annual Report of the Government Chief Scientific Advisor*, chapter 2, forthcoming.

<sup>8</sup> Ben Martin and John Irvine, *Research Foresight: Priority-Setting in Science*, Pinter Publishers, London and New York, 1989.

<sup>9</sup> Remco Hoogma, René Kemp, Johan Schot and Benhard Truffer, *Experimenting for Sustainable Transport. The Approach of Strategic Niche Management*, Spon Press, 2002.

experiments, build more connections between them, and focus on experimenting with societal impacts too. Perhaps innovation policy should provide consortia of actors, including market, state and civil society ones, a licence to experiment with new solutions on a much larger scale than is currently the case, and for a suitable, longer time period.

Thirdly, innovation policy should nurture the development of **new kinds of institutions**, which bring together state, business, academic and wider societal actors. These institutions could facilitate discussion and negotiation on the direction of innovation. In our current system we have on the one hand policies and programmes for the promotion of new technological opportunities through R&D support and tax credits, for example, via the policies of Innovate UK. On the other hand, there are policies for discussing, controlling and regulating the negative impacts of technology. What is missing are institutionalized processes to facilitate societal learning and create a culture in which responsibilities can be shared.

Fourthly, **fusing a wide range of expertise**. Recent SPRU research by colleagues including Alex Coad, Paul Nightingale, Maria Savona and Josh Siepel, concluded that firms become highly innovative when they incorporate Science and Engineering graduates into the workforce.<sup>10</sup> In another report, Paul Nightingale, Roberto Camerani and colleagues argued for the importance of combining creative art, design skills and technology expertise, and showed how precisely the fusing of these elements made the Brighton digital cluster successful.<sup>11</sup> To create successful innovation, science and engineering and business schools need to go beyond specialist career paths and develop a next generation of leaders who understand the need to work in interdisciplinary teams and combine technological and social aspects in order to innovate.

### SPRU Strategy

Over the last decades, innovation scholars have developed building blocks for a new innovation theory, which goes far beyond the Schumpeterian understandings on which current innovation policies are often still based. Time has come to build a new innovation theory bringing together robust building blocks from economics of innovation, science and technology studies, as well as technology management. This new synthesis should rethink the role of the state and civil society in innovation policy; it should incorporate the role of demand, and thus include grassroots innovation and the role of users in transformative change as is currently explored by colleagues working in the Center on Innovation and Energy Demand hosted at SPRU. It should also overcome common tendencies towards Eurocentric bias and link up to new findings in global studies and the innovative work on development as is currently undertaken among others in the STEPs centre run by SPRU and IDS.<sup>12</sup>

Time has also come to implement these new insights into innovation policies and practices. For too long we have seen a gap between insights of innovation theory and practice, we need a new fuse

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<sup>10</sup> Alex Coad, Marc Cowling, Paul Nightingale, Gabriele Pellegrino, Maria Savona, Josh Siepel, *Innovative Firms and Growth*, Department for Business, Innovation & Skills, March 2014

<sup>11</sup> The collaborative Brighton Fuse project looked at the development of Brighton's successful creative, digital and IT cluster. Report available here: <http://www.brightonfuse.com/wp-content/uploads/2013/10/The-Brighton-Fuse-Final-Report.pdf> <sup>12</sup> Steps = Social, Technological, Environmental Pathways to Sustainability, see [www.steps.org](http://www.steps.org);

<sup>12</sup> Steps = Social, Technological, Environmental Pathways to Sustainability, see [www.steps.org](http://www.steps.org);

between both. Innovation policy needs to be transformed and in this process, innovation researchers should actively participate in various roles, as co-designers as well as developers of new ways of assessing quality and impact.

Innovation policies can only flourish when business leaders, technology experts and policy makers have been confronted with new innovation insights during their studies and in other settings. SPRU will therefore invest more in teaching, in its masters' programmes, programmes for professional development, as well as in undergraduate programmes in the School of Business, Management and Economics. We see this as a major avenue for having impact in this world in transition.

Building on the rich tradition established by our founders, Chris Freeman, Geoff Oldham, Keith Pavitt, Marie Jahoda and many others, and on the rich diversity of current activities, I believe that SPRU is in an excellent position to contribute both to the development of a new innovation theory as well as to the much needed transformation of innovation policy. We are well placed in a university proud of its interdisciplinary legacy, and with a strong commitment to policy impact.

So as we look ahead to our 50<sup>th</sup> anniversary in 2016, we are embarking on an ambitious new strategy, provisionally called Transformative Change and Innovation. This will include building a new large collective research programme, working with many other colleagues at Sussex, in the UK and the world, the establishment of new teaching programmes, and the widening and deepening of our engagement with all stakeholders involved in transformative change, including business leaders, policy makers, and civil society. Finally we also want to reconnect with our rich history and alumni community in order not only to recognize and celebrate our past but also engage with them in a discussion about our strategy and the future of innovation policy.

Our world in transition is facing grim, difficult and urgent problems. We are not in the position to stay complacent. A sense of urgency is necessary without, however, nurturing fear since, as Andy Stirling has argued, this closes down debate and leads to bad solutions. During his entire life Chris Freeman embraced an "Economics of Hope" which embodies a positive view of the potential of mankind to use its resources constructively. I hope today is just the beginning of a discussion about transforming change and innovation in this spirit. Thank you.