NESTA Making Innovation Flourish

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NESTA Policy Briefing

Innovation in UK Cities

The UK's cities form spikes of innovation in an otherwise flat world. Our cities need innovation strategies tailored to their unique strengths and weaknesses, but competition between them must not overshadow UK-wide priorities

The world is becoming both 'flatter' and 'spikier'

The World is Flat: Knowledge flows freely across the globe

Thomas Friedman argues that the forces of globalisation and information and communications technologies are bringing about 'the death of distance' – any place with an internet connection can participate in a knowledge-based global economy. Headline statistics seem to confirm this. In India, 23% of the workforce is employed in services, which is the fastest growing sector.[1] Meanwhile, China now plays host to 750 multinational R&D centres.[2] Knowledge and ideas are quickly flowing from one place to another across an increasingly 'flat' world.[3]

The World is Spiky: Clusters are driving innovation

However, when we look at where innovation is occurring, it is not becoming geographically dispersed as Friedman's model would seem to predict. Rather, it is continuing to cluster in specific geographic regions: as Richard Florida contends, instead of being flat, 'the world is spiky.'[4] Furthermore, this tendency for innovation to coalesce is becoming more pronounced, not less.[5] For example, since the 1980s, the City of London has grown enormously and consolidated its position as the world's leading financial centre. Similarly, Reading has emerged as a hub for the UK's IT industry and Aberdeen as a hub for the energy industry.

No contradiction: 21st century innovation depends on 'sticky knowledge'

The resolution behind this seeming contradiction is that developing and exploiting ideas requires far more than access to the kind of knowledge that can be codified in copyright and patents, and transmitted easily over the internet.

Increasingly, the differentiating factor is 'sticky' (tacit) knowledge – the 'know-how' rather than 'know-what'. This can only be gained or transmitted through personal experience and interactions.[6]

Cities form natural 'spikes' of innovative activity

Innovation is a contact sport

Cities, because of their high population density enable these connections to be made (both intentionally and unintentionally) through personal networks and places to gather. This ease of interaction and the high likelihood of chance interactions create the conditions for a hot-bed of innovation.[7]

City infrastructure aids innovation

Successful modern cities have strong infrastructure: a transport system, internet connectivity, educational institutions and the offices of multinational organisations. Through all of these structures, they are well-positioned to tap into global flows of knowledge and highly-skilled labour.

However, because of access to capital and pools of entrepreneurs, they also naturally have the capacity to turn this knowledge into innovative products, services, and companies.

Employers and a skilled workforce form the heart of a successful city

Jobs attract highly skilled people to cities…

The availability of high quality jobs is the single most important factor in attracting well-educated people to a given place. Highly skilled people, however, are attracted not just by

one job, but a labour market that can offer them choice and the prospect of a sustained career. It is this characteristic that continues to attract people to Greater London.

However, this is a rare commodity: only a relatively small number of places offer a labour market that is sufficiently rich and deep to promise a series of challenging employment opportunities.[8]

… and a highly skilled workforce attracts businesses

A deep labour market ensures a consistent supply of high quality employees at a competitive cost. It is unsurprising, therefore, that a highly skilled workforce is a crucial element in attracting and maintaining businesses in cities.[9]

Together these can create a virtuous circle (or a downward spiral…)

A pool of highly skilled people attracts employers, which attracts people – a virtuous circle. However, the corollary of this is that in isolation and without intervention, cities that are not part of this virtuous circle may fall victim to a downward spiral of economic stagnation and a declining skills base.

UK policy recognises the importance of cities in innovation

UK city performance is mixed

The performance of the UK's cities is mixed. While some cities have improved their performance over recent years, many still lag behind their international competitors in terms of GDP, innovation, education and connectivity.[10]

The government is attempting to boost the innovative performance of cities

The UK government has developed initiatives to boost innovative activity, and has identified eight 'Core Cities' in England that they argue 'drive regional and national economic growth'.[11]

It has also named six English cities as 'Science Cities'.[12] These have been tasked with developing a deeper and more widespread engagement between businesses and the science base for the purpose of boosting innovation.

This increased focus on cities and regions as drivers of innovation has been mirrored by the Scottish Executive, Northern Ireland Executive and Welsh Assembly.

How can cities break into this virtuous circle?

Modern innovation occurs within an ecology of innovation

Traditional innovation strategies have been based upon a linear understanding of innovation, where research and development in university or business laboratories generates a stream of inventions that are then commercialised. This view has the advantage of clear and well-tried policy interventions, such as building technology parks and incubators, supporting university-industry technology transfer or raising local venture funds.

However, innovation is now understood as a multi-directional and iterative process that involves multiple actors – an ecology rather than a pipeline.[13]

An ecology is challenging for policymakers

While this has improved our understanding of the process of innovation, the increased complexity of these systems has made policy development more difficult. Stimulating an ecology of innovation requires precise interventions across diverse policy areas, including education and skills, business support, and infrastructure, as well as technology transfer and more traditional interventions.

Innovation requires local institutional support

There are a few broad characteristics that innovative cities tend to display. These include access to capital through investors and financial institutions, access to knowledge and human capital via research institutions, knowledge transfer intermediaries, and targeted business support services. Such bodies take time to evolve, but they are critical in building long-term competitive advantage.[14]

A popular ambition for many cities and regions around the world has been to emulate the success of Silicon Valley in the United States. On *Siliconia*, a website tracking this phenomenon, nearly 80 different areas are cited as appropriating a 'Silicon' moniker, from Silicon Glen (in Scotland) to Silicon Bog (in Ireland).[18]

Cities need to exploit the knowledge and human capital emerging from HEIs

Those cities hosting higher education institutions (HEI) have an inherent advantage as a source of knowledge production. However, an HEI's primary contribution to its local innovation system is not knowledge, but a workforce capable of exploiting knowledge.[15] Accordingly, the creation and retention of high-quality graduates should form a policy priority.

Cities must also provide the infrastructure for knowledge and talent to flow from elsewhere

Although frequently neglected as a component within the UK's local innovation policies, local infrastructure plays a critical role in supporting innovation.

In a 'flattening' world, ideas originating elsewhere can be as valuable for exploitation as those developed locally. ICT infrastructure enables HEIs, research institutions, businesses, and individuals to tap into the global flow of knowledge.

An efficient transport infrastructure facilitates the movement of goods and people within and between cities, and ensures short commutes between suburban areas and the city centres. An affordable housing stock is also important to avoid constraining economic growth.

These are helped further by a creative environment and high quality of life

Richard Florida proposed that a booming economy is driven by the presence of a 'creative class' – scientists, artists, engineers, lawyers, etc. – and that such individuals are attracted to cities characterised by bohemianism, diversity, technology, and talent.[16]

A review by the Work Foundation on the impact of 'quality of life' on development identified a significant lack of clarity about what quality of life means and how it might differ between different populations, particularly those working in knowledge intensive occupations compared to other groups.[17]

Although it remains unclear whether it is a cause or a symptom, quality of life, consumer and cultural amenities, and a diverse environment are important characteristics of an innovative city.

The UK needs 'intelligent competition' to ensure that cities and regions contribute effectively to UK wide growth

Existing local innovation strategies tend to duplicate and overlap

A notable characteristic of many regional and city innovation strategies is their similarity. Of England's nine regional innovation or economic strategies, eight include biotechnology or health sciences as a priority area, and five mention the creative industries. Nearly all include traditional science-based policy interventions such as technology parks, and university-industry collaboration.

This similarity of approaches inevitably leads to competition. But it is not clear exactly how many biotechnology hubs the UK really needs or can sustain, and this duplicative approach may waste resources.

This number of competing efforts may also be counterproductive – preventing the formation of critical mass at any one location.

The UK needs 'intelligent competition' between local innovation efforts

What the UK requires is sufficient competition between local areas to allow for local relevance, policy experimentation and the emergence of good ideas, but not so much competition as to be destructive to the nation's ambitions or its use of public resources.

One solution would be to centralise planning, but such a structure would stifle local experimentation rather than support it. Successful local innovation strategies require in-depth knowledge of local issues and capabilities, which are difficult to appreciate at a national level.

Instead, local ambitions should be placed in a regional and national context. In developing their innovation strategies, cities should

conduct the policy equivalent of an environmental assessment to establish their own strengths and understand what others are doing. The resultant strategy should overtly complement those efforts rather than compete against them.

The UK is currently not ideally set-up to achieve this, although The Northern Way collaboration demonstrates a sensible work-around. This has brought together the three Northern Regional Development Agencies: Yorkshire Forward, the Northwest Regional Development Agency and One NorthEast. They have a collective aim of boosting innovation across the three regions.

A sustainable local innovation strategy should be tailored to the context of the area

In developing its innovation strategy, a city should build on its history and focus on identifying its unique capabilities and challenges. Policies and programmes should then be based clearly on those strengths and the outcomes the city desires from innovation activity, rather than simply attempting to support innovation for its own sake.

And involve participation from throughout the innovation community

Given our understanding of the ecology of innovation, innovation strategies can no longer be developed in a closed room by a small group. They need to include active participation from a coalition including local universities, trade bodies, firms (of all sizes), social enterprises, and community organisations. Such a partnership needs to be more than nominal – responsibilities and rewards for successful execution of the strategy should be shared across stakeholders.[19]

NESTA is working to support cities as hubs of innovation

The NESTA Policy & Research Unit (NPRU) has a focus around the importance of 'place' in innovation. Over the next 12 months, the NPRU will establish research partnerships to investigate relevant issue areas including path dependence and the role of leadership in stimulating regional innovation.

NESTA Connect is a programme exploring the collaborative nature of modern innovation. As part of its programme, Connect is investigating how collaboration, both physical and virtual, is influenced by where people live.

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[1] www.cia.gov/cia/publications/factbook/geos/in.html. Accessed 17 January 2007.

[2] Chinese Ministry of Commerce cited in James Wilsdon and James Keeley (2007) China: The next science superpower?, (DEMOS, London).

[3] Friedman, T. (2005). The World is Flat: A Brief History of the Twenty-first Century (Farrar, Straus and Giroux, New York).

[4] Florida, R. (2005). The World is Spiky (Atlantic Monthly, Boston).

[5] Asheim, B and Gertler, M (2005). 'The Geography of Innovation'. Fagerberg, J et al (eds). Oxford Handbook of Innovation (Oxford University Press, Oxford).

[6] Tacit knowledge: a type of knowledge which cannot be codified, but can only be transmitted via training or gained through personal experience. Tacit knowledge has been described as 'know-how', as opposed to 'know-what' [facts] and 'know-why' [science]. Originally accredited to Michael Polanyi.

[7] Burt, R. (2002). 'The Social Capital of Structural Holes' . New Directions in Economic Sociology. (Russell Sage, New York).

[8] Florida, R. (2003). 'Entrepreneurship, Creativity, and Regional Growth'. Hart, D (ed). The Emergence of Entrepreneurship Policy. (Cambridge University Press, New York)

[9] Simmie, J (2004). 'Innovation Clusters and Competitive Cities in the UK and Europe'. Parkison, M and Boddy, M. (eds) City Matters. (Polity Press, Bristol)

[10] The Office of the Deputy Prime Minister, HM Treasury and Government Office for the English Regions. (2004). Our Cities Are Back, Competitive Cities make Prosperous Regions and Sustainable Communities - Third Report of the Core Cities Working Group. (The Office of the Deputy Prime Minister, London)

[11] The eight 'Core Cities' are Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield.

[12] The six 'Science Cities' are York, Birmingham, Bristol, Manchester, Newcastle, and Nottingham.

[13] NESTA. (2006). The Innovation Gap. (NESTA, London)

[14] Maskell, P and Malmberg, A. (1999). 'Localised Learning and Industrial Competitiveness'. Cambridge Journal of Economics. (Oxford Journals, Oxford)

[15] Salter, A. et al (2000). Talent, Not Technology: Publicly Funded Research and Innovation in the UK. Report commissioned by CVCP and HEFCE.

[16] Florida, R. (2002). The Rise of the Creative Class. (Basic Books, New York).

[17] Lee, N. (2006). Ideopolis: Knowledge Cities Working Paper - a Review of Quality of Life Indicators. Report commissioned by The Work Foundation. (The Work Foundation, London)

[18] http://www.tbtf.com/siliconia.html. Accessed 17 January 2007.

[19] HM Treasury (2006). 'Devolving Decision Making: 3 - Meeting the Regional Economic Challenge: The Importance of Cities to Regional Growth'. (HM Treasury, London)

Manchester provides a strong example of a holistic and coordinated approach, with their Knowledge Capital campaign (City of Manchester, 2005).

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NESTA Policy & Research Unit

1 Plough Place
London EC4A 1DE
research@nesta.org.uk

www.nesta.org.uk