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Integrated visions for
knowledge cities

Introduction

Cities and their regions are positioned as critical places where the challenges of knowledge-based growth in the Twenty-First Century will be met. 'Knowledge' is accorded a central role in economic growth and competitiveness.

Policy frameworks at international, national and sub-national levels have positioned cities to play a key role in building the knowledge economy to harness science, technology and innovation for wealth creation and economic competitiveness.

National responses differ. In some countries specific national initiatives have been designed and funded to support the development of urban capacities for innovation, create clusters of higher education expertise, public-private collaborative platforms and low carbon transitions.

Support for knowledge cities may be targeted at specific cities – for those lagging behind or for those at the forefront of the innovation game. Alternatively, it may be left for cities themselves to develop responses to the global challenges of knowledge-based development.

The context of the recession has brought the role of cities in the knowledge economy into a new light. The danger is that an over-emphasis on the economic role of knowledge and innovation will crowd out important shifts in understanding that have taken place over the past decade and undermine the development of more integrated visions for knowledge cities.

Where are we now?

The search for knowledge-based competitive advantage has permeated urban and regional development with rhetorical flourishes and geological imagery: from knowledge corridors, clusters or capitals to silicon valleys, alleys, glens and fens. Expectations of knowledge are high: investing in knowledge and innovation is hoped to improve economic, social, cultural, educational, health and environmental outcomes.

Policy-makers appear to be clear on what they believe is needed. Much less consideration has been given to how is it to be achieved and under what conditions? What is the role of different knowledges, institutions and sectors? What can be expected of knowledge-based interventions and with what implications for the effectiveness of policy? Policy has proceeded at a startling rate. In the process, a series of issues have emerged.

Popularised examples of knowledge-based development often hold an exemplary status and assumed relevance for multiple cities and regions. Cities have sought eco-fixes or scientific emblems as a means to replicate success from elsewhere in an emphasis on a quick fix or by utilising what are assumed to be transferable models.

In the search for world-class excellence, cities try to acquire ingredients for knowledge-based success, as if a recipe existed for innovative growth and development. Emphasis is placed on attracting stellar academic performers or international students, supporting biotech clusters and digital hubs or building new sites where scientific activity is to take place.

Spatial effects are evident. National frameworks may stress how all cities or urban areas must contribute to the search for knowledge-based success on the assumption that general benefits will follow from such endeavours. Advantages, however, may become concentrated, with such effects exacerbated and not ameliorated in the context of recession.

Economic and political imperatives come together. Global recognition for different cities comes through labelling initiatives. The accolades of being 'world class', 'excellent' or 'stellar' are sought after by many. Technologies are often embraced as panaceas to address urban problems through, for instance, increasing building efficiencies, providing new information technology platforms or creating new energy sources for urban transport.

Underpinning the production of urban futures are dominant social interests. Central here are questions of who constructs visions of potential pathways for knowledge-based development and whose voices remain sidelined? Without sensitivity to these questions, the challenges of knowledge-based urbanism may be framed in very particular ways (see Table 1). Socially-inclusive and integrated visions are thus in danger of falling victim to particular views of cities.

Table 1: Approaches to knowledge-based urbanism

Approaches to knowledge-based urbanism		
Feature	Dominant responses	Alternative responses
Objectives	Econo-centric	Varied
Measurements	Tangible	Intangible
Scales	Global excellence	Global 'excellent relevance' and 'relevant excellence'
Processes	Linear, products, supply/demand, push/pull models	Ecosystems, networks and flows
Knowledges	Narrow, disciplinary, sectoral, codified	Broad, interdisciplinary, cross-sectoral, tacit
Mechanisms	Technological, mechanistic solutions	Multiple interventions and mechanisms
Learning	Transferable models	Context-sensitive approaches
Social interests	Elites: corporate, governments, major institutions	Wide stakeholders, potential beneficiaries and participants

Differentiated knowledge about, for and in cities is required to re-think how context-sensitive approaches can be developed to address the environmental and economic challenges of the Twenty-First Century.

This means unbundling dominant ways of framing the roles of cities and city-regions in relation to contemporary challenges and re-bundling new knowledges, social interests and pathways for development. The central questions to be addressed are not about what should be done, but how, by whom and with what resources and consequences?

Unbundling knowledge

When thinking about knowledge and cities, we can see how a series of polarisations have framed urban interventions.

- Universities, cities and their partners are urged to be global and local. Many different actors seek to feature in league tables and world rankings, creating dynamic tensions between the global and the local. Sets of policies may emerge which embody different spatial assumptions and might, in a single place, act to contradict each other.
- Excellence and relevance are often seen as polar ends of a single spectrum. These are complex terms that include position in academic league tables, research income generated, industrial application and community engagement.
- Tensions may exist between concerns from the top-down and bottom-up linked to relative levels of devolution and decentralisation. National governments may emphasise the concentration of resources for critical mass (for some), at the same time as an obligation (on all) to contribute to 'national' infrastructure and resources. City-regions may then be concerned with redistribution between, rather than within, regions.
- A narrow science-based economic view of the knowledge economy has been juxtaposed with a wider set of concerns with how society develops more inclusive knowledge-based futures.
- Different values are attached to forms of knowledge creating hierarchies between the sciences, social sciences, arts and humanities in urban knowledge-based development.
- Traditional views on the relationship between knowledge production and knowledge exploitation tend to posit push and pull strategies as exclusive rather than focusing on dialogue and the mutual constitution of need.
- The knowledge-based agenda is often subsumed within debates over a more narrowly-defined emphasis on 'innovation'. The latter is closely associated with economic development and has traditionally been understood as a linear process from idea to commercial exploitation.

When it comes to city-regional innovation, these dynamics can have particular manifestations. In the SURF-MIoIR formative evaluation of the Manchester Innovation Investment Fund (see Table 2) we saw how partners grappled with the tricky balance between

proactive commissioning and responsive opportunism; between theory-based interventions and those developed through practice; between an emphasis on ecosystems thinking and economic development priorities and between risk-avoidance and risk management.

Table 2: The Manchester Innovation Investment Fund

The Manchester Innovation Investment Fund
The Manchester Innovation Investment Fund (MIIF) was officially launched in 2007 as a funding partnership between the National Endowment for Science, Technology and the Arts (NESTA), the North West Development Agency (NWDA) and Manchester City Council (MCC).
The MIIF constituted an experiment in financing innovation and transforming the innovation ecosystem of a city region. The MIIF provided a catalyst for critical thinking and contexts to combine to bring the ‘what’ and the ‘how’ of innovation together and populate the ‘missing middle’ between expectations of knowledge-based growth and the capacities and capabilities of different actors to deliver.
The Fund provided the Greater Manchester area a unique opportunity to draw on cutting edge thinking to reshape the urban innovation ecosystem as well as understand how (or indeed whether) emerging innovation theories could be translated into practice – and with what effects for economic, social and environmental outcomes.
A central part of the process was a formative evaluation. Formative programme-level evaluation was commissioned from a team comprising the Centre for Sustainable Urban and Regional Futures (SURF, University of Salford) and the Manchester Institute of Innovation Research (MIOIR, University of Manchester). The aims were to capture lessons and feed those back to partner organisations to enable learning to have real-time, practical effects.

Re-bundling knowledge

What is needed is a fresh way of approaching knowledge-based development in cities that brings different aspects together within a more holistic approach. This would recognise diversity of knowledge, of sectors, of interests and of outcomes.

Buildings and assets matter. Infrastructural foundations are important, yet it is not simply a question of acquiring ingredients for knowledge-based success. Multi-national institutions – whether universities, airports or museums – need to be embedded in their localities. They need to create positive connections between global and local roles and responsibilities and search for both excellence and relevance to particular places and communities.

Innovative processes and ways of working are also needed at city-regional level. An emerging understanding of the role of public sector innovation, hidden innovation, the creative economy and sustainable innovation can be seen. Central to process-driven knowledge-based urban development is an understanding of different kinds of knowledge and their potential effects.

Products are also part of the picture. Statistical improvements may be seen through generating data relating to spin-outs, spin-offs, jobs created or new services offered. Narrow economic and technological outputs then predominate over socio-cultural, educational and environmental ones.

Table 3: Knowledge-based urban development

Knowledge-based urban development			
	Influences	Responses	Role of cities
Acquisitions	Urban growth theory and urban entrepreneurialism	Emphasis on the ingredients for success to be acquired; ‘what’ rather than the ‘how’ or ‘why’	Emphasis on branding and position. Marketing role for cities
Products	Economics and innovation studies	Knowledge as a product to be exploited by ‘end-users’	Passive, facilitative role for cities in terms of creating an environment for innovation
Processes	Social studies of science and technology	Knowledge as a process; new modes of knowledge production, ways of working, user engagement and knowledge exchange	An active role leading to varied political, economic and social benefits

Source: Perry, B (2008) ‘Academic Knowledge and Urban Development: Theory, Policy and Practice’. In T. Yigitcanlar, K. Velibeyoglu and S. Baum. ‘Knowledge-Based Urban Development’. Hersey, New York. Information Science Reference.

Knowledge-based urban development is often more about acquisitions and products than processes (see Table 3). Different kinds of interventions are needed to knit these dimensions together (see Table 4).

Additive interventions seek to improve specific indicators within a city-region or to fill gaps in existing approaches. The overall aims may relate to improving positions in national and international indices and league tables through R&D spend, patents granted or employment in knowledge sectors.

City-regions might invest in the physical realm, through estate development, campus re-design, large scale-infrastructure projects or new buildings for science, innovation or knowledge. Interventions may be symbolic aimed at changing urban identities and images. Direct outputs may be less important than the need to re-position cities as particular kinds of places capable of attracting and retaining talent, operating at ‘world class’ levels.

The above may be important. Yet transformative interventions are needed to ensure that activities are embedded and harnessed for the benefit of different stakeholders. Transformation would emphasise how the city-region thinks about the role of knowledge, as well as its processes, interactions and potential benefits.

Table 4: Types of interventions

Types of interventions	
<p>Physical</p> <p>Knowledge or science is a physical agent to achieve other non-scientific goals, such as the redevelopment of deprived or industrial neighborhoods. The focus tends to be on estate management, the reconfiguration of infrastructures and provision of ‘innovation’ spaces.</p>	<p>Symbolic</p> <p>Science also has symbolic value. Investments are made in high profile areas as a crucial part of building a positive image and reinventing regional identities. Initiatives are not designed to lead directly to improvements in economic performance, but to enhance reputation, image and scientific credibility.</p>
<p>Additive</p> <p>A third type of intervention focuses on gaining additional resources through capacity-building and enabling regional institutions to better compete in national and European competitions. These additional resources may be stitched together from a variety of sources for city-regional/regional benefit. Interventions may also be aimed at attracting knowledge workers or knowledge-intensive businesses as a basis for competing globally.</p>	<p>Transformative</p> <p>Knowledge-based urban development can be transformative, with investments designed to direct the science base towards regionally important areas of research. This involves not only linking science with industry but determining scientific priorities and the reorientation of universities towards regional and local socio-economic needs.</p>

Source: Perry, B. and May, T. (2010) ‘Urban Knowledge Exchange: Devilish Dichotomies and Active Intermediation’, International Journal of Knowledge-Based Development. Vol.1: No.1/2. pp.6-24.

Next steps

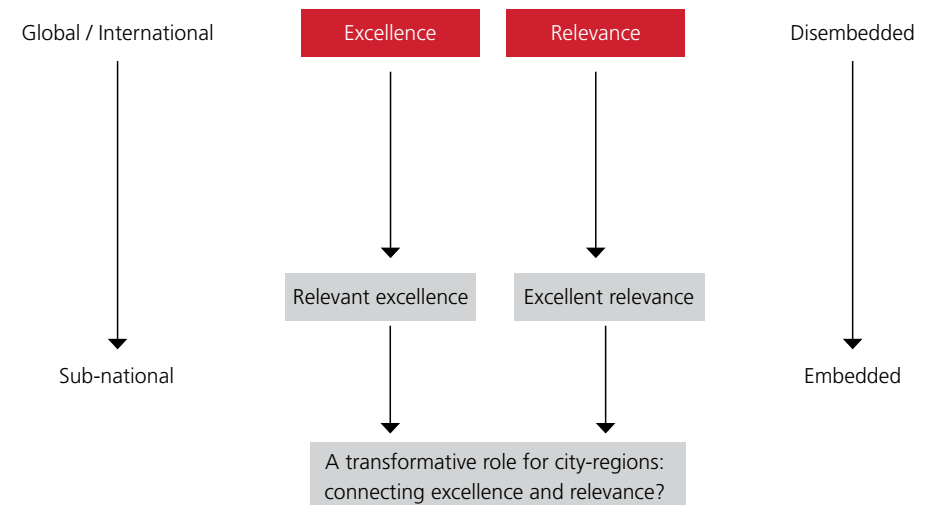
The challenge for cities is to move beyond narrow ways of working.

‘Excellent-relevance’ and ‘relevant-excellence’ are needed in which the effective production and application of knowledge are brought together for the benefit of different places (Figure 1).

It is to knowledges rather than to narrow definitions of science that we must look and to the contributions made from a range of academics, businesses, voluntary organisations, governmental departments and civic and social groups. Active intermediaries and urban knowledge arenas, in which public and private actors can come together to develop innovative approaches to governance and processes through new coalitions of interest, may provide new mechanisms to overcome simple polarisations.

National and sub-national partners need to work together within policy frameworks which are mutually developed and supported. Current thinking questions the isolation of innovation policy from other policy domains, emphasising instead the cross-cutting and systemic nature of innovation processes across and between policy objectives.

Figure 1: Connecting excellence and relevance in city-regions



Source: SURF 2010

Five pre-conditions for integrated visions for knowledge cities emerge.

1. City-regional interventions based on a reliance on 'trickle down' need to be critically examined in terms of their potential, over time, to have benefits for different communities.
2. This needs to be accompanied by an understanding of how, when and in what shape benefits may materialise, if initiatives are to be politically and economically effective and socially sustainable.
3. Understanding the wider socio-technical implications of knowledge-based initiatives is needed.
4. Learning through shared know-how is the kind of exchange between cities that should be encouraged to replace the dominant emphasis on one-size-fits-all solutions and the importation of ineffective models of so-called best practice.
5. Knowledge needs to be interdisciplinary, multi-sectoral, have global resonance and local relevance and be co-produced to ensure the effective exchange of knowledge between producers, users and consumers.

This is not a blueprint for action but a framework for understanding what kinds of guiding visions may be important. We need to question whether the activities and investments in the pre-recessionary context are suitable for addressing current issues, be clear about where benefits lie and how and for whom they might be realised. A danger exists in retreating into narrow economic orthodoxy about the roles of cities and the knowledge economy. The opportunity to understand, learn and integrate existing knowledge and experiences should not be lost.

Greater efforts should be invested in international city-regional comparisons in order to identify where experiments in city-regional knowledge are taking place and to better understand their effects and potentials. The challenge is not only to fund or support 'innovation' but to be 'innovative' in relation to the delivery of public services, values, governance structures and intermediary processes.

This requires honest reflection from the experiences of different cities – from Greater Manchester to Gothenberg, from Kisumu or Cape Town to Shanghai, as well as from different contexts across Europe, the US, Australia, Africa, South America and Asia. Learning is needed which integrates local knowledges and experiences within frameworks of action and understanding that enhance our grasp of 'what works, how and where'.

Further information

This booklet was written by the following members of the SURF Team: Beth Perry, Tim May, Simon Marvin and Mike Hodson.

The Centre for Sustainable Urban and Regional Futures is a largely self-funded centre. It was established in 2000 to undertake inter-disciplinary research on governance, knowledge and innovation and environment and energy. The Centre is part of the University of Salford's 6* Built and Human Environment (BuHu) research group. For more information please see: www.salford.ac.uk/surf

We have drawn upon our research for public and private clients at city, regional, national and international level in writing this booklet. This includes:

- ESRC-funded work on building science regions and cities; the roles of universities in the knowledge economy; business and the knowledge-based region.
- A formative evaluation of the Manchester Innovation Investment Fund, funded by NESTA, NWDA and Manchester City Council (SURF and MIoIR 2010).
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This booklet is the third in the series of publications produced to mark SURF's 10th Anniversary. For more information, please contact Dr Vicky Simpson, Research Administrator at v.simpson@salford.ac.uk

The two preceding booklets are available via our website and are entitled 'Active Intermediaries for Effective Knowledge Exchange' and 'The SURF-ARUP Framework for Infrastructural Development'.

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