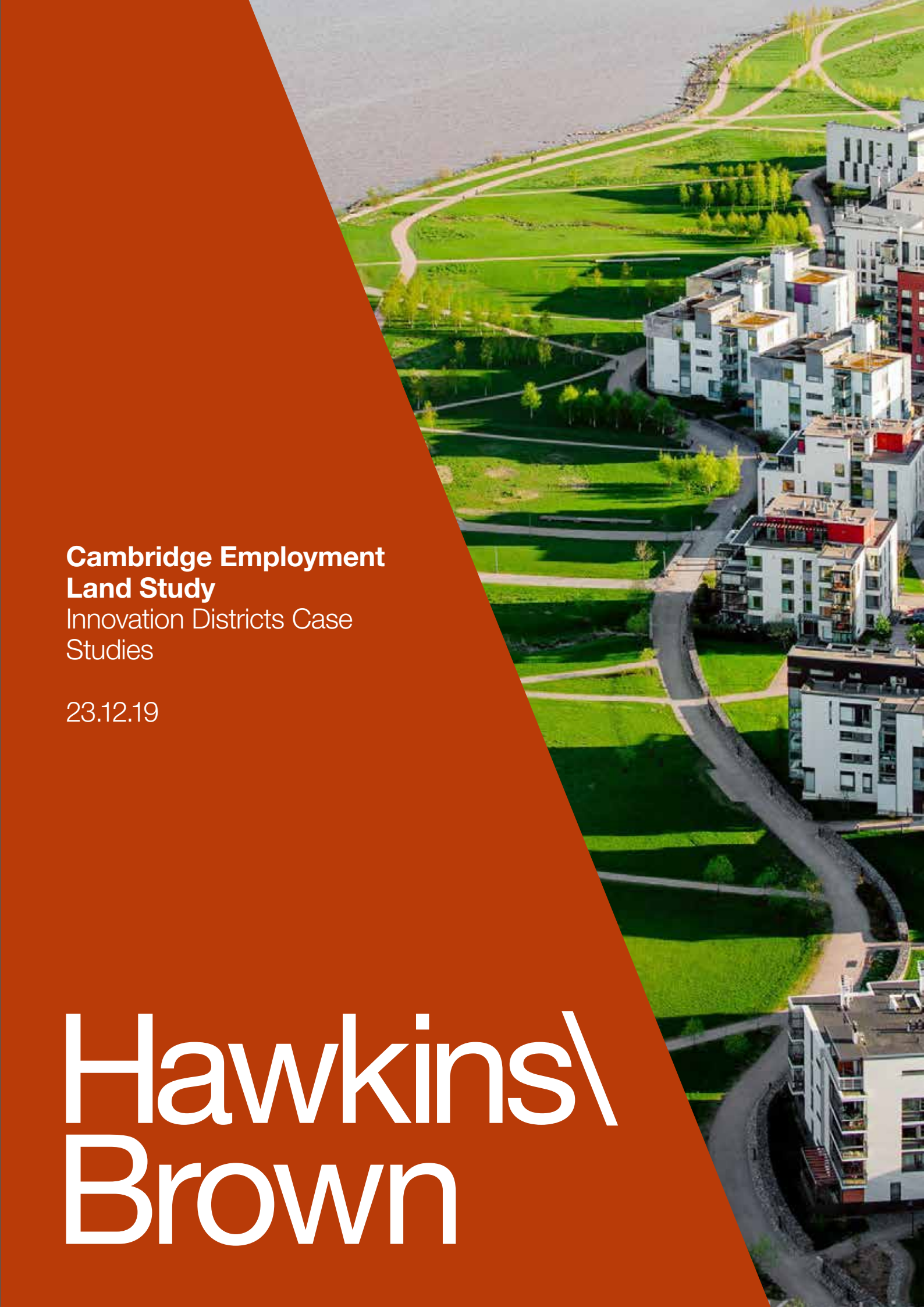

Cambridge Employment Land Study

Innovation Districts Case Studies

23.12.19

Hawkins\
Brown

Innovation District Case Studies
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Contents

1 Introduction
1.1 Innovation districts as a new regeneration model

Purpose of Report
This report was prepared as advice to accompany the Greater Cambridge Employment Land and Economic Development Evidence Base and preparation of the North East Cambridge Area Action Plan. The report focuses on four aspects of Innovation districts with key 'positions' illustrated through contrasting global case studies. The report concludes with specific recommendations for the Greater Cambridge Shared Planning Service.

What is a Innovation District?
An innovation district is essentially a post-automobile, walkable "live-work", mixed-use neighbourhood which creates the opportunity for collaboration between different actors.

In his influential report "The Rise of Innovation districts: A New Geography of Innovation in America", Julie Wagner and Bruce Katz define an innovation district as:

"geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. Compact, transit-accessible, and technically-wired, innovation districts foster open collaboration, grow talent, and offer mixed-used housing, office, and retail."

According to Wagner and Katz an innovation district is

– A distinct geographic entity within a highly integrated urban environment that provides sufficient physical assets

– A mixed use neighbourhood that includes commercial, retail

– And residential uses that provide sufficient networking assets.

– A knowledge economy cluster that provides sufficient economic assets

The innovation district model combines the idea of a highly integrated mixed-use neighbourhood with the idea of a specific economic cluster, which thrives best under such spatial conditions. As an urban model the innovation district promotes attractive neighbourhoods where facilities are easily accessible and carbon-based transport is minimised. As an economic model it maximises opportunities for collaborations.

Innovation District Typologies
As urban and economic conditions vary across the globe there is no clear cut model how to create an innovation district. Generally we can distinguish four different typologies that each entail a different methodology as to formulating growth:

– 'Naturally occurring' innovation districts that merge and evolve primarily through the actions of a network of actors from the bottom up. The 'silicon roundabout' around Old Street in London is a good example.

– Innovation districts as catalysts for the urban regeneration of derelict urban areas that need new economic impulses, for example 22@Barcelona or Kings Cross.

– Regeneration of existing science parks with new infrastructure and residential uses to cater for new industries and tenant expectations, for example the new Park Centre at Research Triangle Park

– Fully new developments on green field at the edge of existing cities (like Cambridge North West) or new cities (like Skolkovo in Moscow)

Cultural differences are also important. While in European countries the public administration and institutional anchor tenants play a bigger role, private developers and large companies are the central actors in the Anglo-American hemisphere.

Case Studies
To the extent that the planning of innovation districts is essentially the planning of urban regeneration, albeit with a specific economic theme, its various forms of materialisation are as diverse as the urban conditions it intervenes in. High level principles can be drawn from case studies.

The following pages provide detail on international (Europe and US) developments that set out approaches across four themes:

- Public realm management
- Integration of residential uses
- Local socio-economic impact
- Phasing

Top left
Silicon Roundabout London, a 'naturally occurring' innovation district

Bottom left
Moscow Skolkovo Techno Park, a new urban development on a green field site

Top right
The Media-TIC in the 22@ Barcelona catalyst in a wider urban regeneration project

Bottom right
Mixed use "Park Centre" development at Research Triangle Park/North Carolina/ USA, an enhancement of the existing science park

2 Public Realm Management Models

2.1 Background

Public Realm

Public realm is an essential infrastructure of innovation districts. As an area shared between employees, residents and visitors, public realm facilitates the overlapping of social and professional networks.

How this social life is organised and regulated is key to how public realm performs as a 'networking asset'. Therefore, not just the provision of public realm, but how it is designed, programmed and managed are critical success factors.

Public v Private

The last 20 years have seen a fierce debate about the growing privatisation of the public realm in the UK. Authors like Anna Minton sharply criticise that in some new developments, for example Kings Cross, the public realm, contrary to a true public space, is actually owned and managed by the private land owner. The key concern against these so called POPS (privately owned public spaces) is the extent to which a private landowner can control activities like political demonstration, photography or rough sleeping. Within private developments, so Minton and others claim, public realm becomes a commodity that supports predominantly private economic interests of the landowner but not the general public, thus they are *"undemocratic and exclusive: too commercial, corporate, securitized, sanitized and exclusionary in feel, and therefore, not public at all."* And indeed, under existing laws, public access to POPS remains at the discretion of landowners who are allowed to draw up their own rules for "acceptable behaviour" on their sites and alter them at will. These rules do not have to be published; and in reality this rarely happens.

The other side of the debate claims that in terms of financial means and organisational flexibility private owners are much better than public agencies suited to develop and maintain high quality public spaces that meet specific user needs.

The upkeep of the public realm is in the very interest of the owner as this keeps the value of their asset.

Being landlord and pubic realm agent at the same time allows private organisations to better understand the needs of users and address issues much quicker and more creatively.

The experience of everyday users is largely indistinguishable within a publicly or privately owned public space.

The debate in contrast is mainly motivated by underlying ideologies. It pitches neo-liberal positions against left leaning statism. Matthew Carmona tries to bridge the two sides by noting that although there has been an increasing privatisation of the public realm the effects for real life have been limited. He sees the public realm as a field of many actors who ideally work together:

"Ultimately, the rights and responsibilities associated with spaces and what this implies about their 'publicness' are far more important than who owns and manages them. How, not who, is key. In fact, the spaces of the city are owned and managed through multiple complex arrangements, many of which are not clearly public or clearly private, whilst restrictions on use apply to all spaces, regardless of ownership."

Public realm is a genuine place of collaboration.

Pubic Realm in Innovation Districts

The discussion of the merits of publicly or privately owned and managed space is not intrinsic to the innovation districts but is, as for all urban regeneration models, very relevant. How the public realm in innovation districts functions as a network asset both in its design and flexibility is of key interest. Public realm is thought to be a key space of 'collisions' and interactions. Place making is therefore central to the success of an innovation district. Kings Cross for example clearly prioritises the quality of its public realm design alongside that of its buildings, a substantial upfront investment whose benefits have been well documented. Harwell in Oxfordshire, as an example of an existing science park, struggles with a legacy of disinvestment in its public spaces.

2 Public Realm Management Models

2.2 Case study: Kings Cross - The private, highly defined model

Description

Kings Cross contains a good example of a successful privately owned public space with high design quality and intense programming. Maintenance levels are high.

Developer Argent saw the public realm as a crucial success factor for the overall development. It attracts the right tenant ecosystem and drove real estate value. For this reason, the public realm was finished before the buildings, creating a massive upfront investment for Argent.

The public spaces are designed as pedestrian friendly interaction arena for knowledge industries (like Google) and anchor institutions like Central Saint Martins. Public events and attractions like the water fountains on Granary Square attract a high number of visitors from all over London.

Argent was not willing to create the public realm without keeping control over the activities taking place. It refused any written planning agreement about this with local planning authority Camden Council. It is therefore a highly controlled place with undisclosed rules. This control makes it easy for Argent to quickly adjust design and programming to according to the changing need of the knowledge economy ecosystem of Kings Cross.

Spectrum of response

Content programming:

Passive — Active

Management:

Permissive — Restrictive

Left
Recreational space for residents in Lewis Cubitt Park

Middle
Granary Square has become a London wide attraction

Bottom
St Pancras Square is designed as an interaction space for employees of the adjacent knowledge sector companies

Key Figures

- 53 ha
- 1,900 homes
- 25,000 jobs
- 7.5m visitors (2015/16)
- 10.5 ha public realm
- 163 events (2015/16)
- 10 new public parks

and squares. £1.2m investment into public space (Source: Regeneris)

2 Public Realm Management Models
2.2 Case study: Arabianranta - The public evolving model

Description
The Arabianranta area in the north-eastern outskirts of Helsinki is a success story of urban regeneration with a publicly owned public realm that has evolved around a growing art program. This innovation district combines living, working, studying and leisure guided by a holistic theme – 'design, art and creativity'. Arabianranta is known as a best practice cases study combining the knowledge industries with urban regeneration projects.

Central ingredients of the projects are a strong residential character (with a range of experimental tenancies), a pioneering virtual community, workplaces around the creative industries, the university as an anchor tenant and a publicly accessible and managed communal public realm which is was designed as an experimental space where art and social interaction goes hand in hand. The park is conceived as an evolving stage for the community. The City of Helsinki requires all developers in the Arabianranta area to use 1-2% of the building investments of individual sites for works of art. Participating artists include such prominent figures like Robert Wilson or Elina Aalto.

Another pioneering public realm intervention is the early, experimental adaptation of a virtual community based on wireless technologies.

Spectrum of response
Content programming:

Passive — Active

Behaviour regulation:

Permissive — Restrictive

Top
Aerial showing the open courtyard layout
Left
Tapio Wirkkalan Park designed by Robert Wilson
Below left
Public art by Ann Sundholm
Below right
Housing blocks around communal courtyards.
Bottom
Future intervention to improve the interaction between companies in form of a new courtyard sequence by Gehl architects.

Key Figures
- 85 ha
- 12,000 inhabitants
- 8,000 jobs
- 6,000 students
- 400+ companies (mainly design and IT)
- 3 museums and two higher education institutions

3 Residential Uses
3.1 Making the case for residential integration

Ordinary Life is Essential for Innovation

One of the key differences between the classic business/ science park model and an innovation district is that the latter should include at least some residential uses. together with a whole range of associated facilities such as schools, nurseries, and shops.

An innovation district is essentially a post-automobile, walkable "live-work", mixed-use neighbourhood which creates the opportunity for collaboration between different actors. The trust on which a successful innovation district relies is created within informal networks through "weak ties", that are formed in places like clubs, around schools, nurseries or along shared walking routes to work. Social trust is essential for professional collaboration i.e. "strong ties". Residential accommodation and associated uses are essential networking assets of an innovation district.

Working and living in the same neighbourhood is important to create a local identity and a local community of like-minded people that share interests and values. The much-sought-after innovative community is more likely to evolve from sharing banal everyday activities. The new cannot develop without the ordinary.

There is much discussion in the research to what extent the combination of housing, creative workplaces and amenities manifests itself in increased collaboration and ultimately economic gain. There is no hard-wired evidence for this (but also nothing that contradicts it). However, it is commonly agreed that a certain urban "buzz" is necessary to attract the right tenants and hence to create the right atmosphere of an innovation district.

How Mixed is Mixed-use on the Ground?

Beyond the overarching decision to mix residential and commercial properties it is important to define how housing integrates with workplace typologies: what is the real nature of the mix of an urban area? Residential uses can be organised as:

– Separate neighbourhoods

– Separate clusters

– On a building by building, streetscape level

– Within a building

Kings Cross, for example, is a "mixed-use" innovation district, but follows a strict zoning approach. Most commercial developments are located south of the Regent Canal whereas most of the housing is towards the north with Central Saint Martins and the Coal Drop Yards separating the two areas, creating a de-facto split between neighbourhoods spatially land functionally.

The working assumption of innovation district theory is, however, that an intense integration of uses improves network asset values.

A rare example of an innovation districts that radically mixes uses at a building level is the WeLive complex at the Brooklyn Navy Yard, New York.

Residential development Strategies

Residential uses dominates

Eddington, North-West Cambridge is an area that exemplifies a focus on the residential uses and a clear need for affordable accommodation. It is widely discussed that cities like London unwittingly deprive themselves of their innovation potential due to the undersupply of housing. A similar "housing first" mechanism happens in natural occurring innovation districts where often cheap and readily available accommodation attracts the right demographic to live and work in the same place.

Retrofit residential uses

Often ageing science parks, like Harwell or Triangle Research Park, see the need to add new housing developments. This is not only to cater to the needs of employees who would like to live closer to work but also to "urbanise" the existing development, which is often perceived as too sterile. Here residential uses aim to add "buzz" to an otherwise monofunctional environment.

Mixed-use from the outset

A balanced mix between residential and commercial uses seems to be a successful approach to maximise synergies. A pioneer in this field is the MIT in Cambridge, Massachusetts, which successfully combined large residential and office blocks in its University Park. Apart from providing much needed residential accommodation this project successfully provides an income stream to the university. London's Imperial College is copying this approach for its White City Campus extension.

There is some reason to expect that any successful university campus development will have to embrace a highly integrated mixed-use approach from the outset.

3 Residential Uses
3.2 Case study: Eddington, Cambridge - Diverse housing

Description
Cambridge Eddington is not officially labelled or planned as an innovation district. However considering the planning of a future 100,000 sqm of commercial research facilities it has all the potential to become one, especially considering the young and dynamic academic workforce it will accommodate.

It is first and foremost an urban extension by the University of Cambridge to provide housing for three particular academic groups: postgraduate students, university key workers and post-doctorates. These groups power Cambridge's innovation machine, but struggle to find affordable housing.

The area provides a wide range of housing typologies tailor-made for the needs of these academic groups as well as market sale housing.

Eddington is distinctive in its high integration of different housing typologies into a new walkable neighbourhood with a wide range of communal uses and (future) research facilities.

Left
Market sale houses

Middle left
Housing for postgraduates

Middle right
Town houses for university staff

Bottom
University keyworker accommodation

Spectrum of response
Balance of uses:

Less Resi — More Resi

Integration of uses:

Less — More

Key Figures
- 150 ha
- 1,500 homes for University and College staff
- 1,500 private houses for sale
- Accommodation for 2,000 postgraduates/ postdocs
- 100,000 sqm of academic and research & development space
- Community facilities including the University of Cambridge Primary School, Storey's Field Centre, health centre and care village
- Retail
- Hotel

3 Residential Uses

3.3 Case study: Research Triangle Park - Residential as an add-on

Description

The Research Triangle Park is one of the oldest and most successful science parks in the USA. It was created in 1959 by state and local governments, nearby universities and local businesses.

Over time the park has started to become unattractive for younger companies and a millennial work force which prefers a more urban lifestyle. The "Park Center" was planned to address this declining appeal. The new mixed use development including housing, retail and commercial uses forms a "mini-city" within the wider landscape of the RTP which is still otherwise dominated by commercial office developments.

However the original Park Center plans which included a new railway, experimental co-living and startup building typologies, seem to have ceded to a more conventional development that sits insularly within the vast area of the car dependent science park. Its "urban character" is reduced to a few pockets within the new campus that on a whole is not too different to the existing developments.

The new Park Centre is more an add-on to the existing park than the transformative project promised back in 2014. This does not mean RTP has become less successful in terms of providing a good environment for technology companies, but it shows how difficult it can be to update a monofunctional innovation district retrospectively.

Left
Plan of RTP with the Park Centre development in red

Top
Typical office development within the park area

Bottom
Excerpts from the masterplan vision document

Below
Masterplan for the new Park Centre

Key Figures

- RTF size: 2.833 ha
- 300 companies with 65,000 workers and contractors
- New Park Center Size: 41 ha
- 771 residential units
- 2 Hotels + convention centre
- Large retail park

Spectrum of response

Balance of uses:

Less Resi — More Resi

Integration of uses:

Less — More

3 Residential Uses

3.4 Case study: University Park at MIT, Cambridge - Mixed-use by principle

Description

University Park at MIT is a successful science campus that is founded on a residential mixed use concept. MIT retains ownership and management of residential rented accommodation and benefits from it as an additional source of revenue.

University Park at MIT is an urban renewal project on the area of the former Simplex company. It comprises office and laboratory buildings that are home to several biotechnology companies, residential developments, retail, and parks and open space. The campus has become an organic part of the surrounding city.

The concept has been transferred to the new Kendall Square development in Cambridge, Massachusetts and influenced, for example, the new White City campus development by the Imperial College in London.

Left
Masterplan showing residential units (orange), commercial units (pale blue) and parking (blue)

Middle left
Commercial buildings at the central park

Middle right
Reused warehouses with residential units

Bottom
The large wire spool in the University Park Common is a reminder of the property's former use as home to the Simplex Wire & Cable Company

Spectrum of response

Balance of uses:

Less Resi — More Resi

Integration of uses:

Less — More

Key Figures

- 11.3 ha
- Total gross development area 241,550 sqm
- 674 residential units
- 140,000 sqm lab/ office space
- Hotel and conference centre
- 7,000 sqm restaurants, retail and childcare
- 2,600 parking spaces
- Large urban park system

4 How to spread the Benefits of Innovation Districts to the Wider Community

4.1 Background

The divide dilemma

Julie Wagner, one of the key thinkers behind the concept of innovation districts, admits that innovation districts are often plagued by the "divide dilemma", or the propensity to become insular. Due to their specialist nature and demographic structure innovation districts tend to become insular developments in terms of social and economic benefit but also in terms of placemaking. Innovation districts often require investments on a government level and are, therefore, more of regional than local importance.

Local spill-over?

As the name suggests innovation districts benefit from a strong international "brain gain". Although it is an assumption that geographic proximity leads to an increase in knowledge creation, there is no direct causal evidence for this. There are however a multitude of studies that emphasise the importance of regional and international networks. Innovation districts are usually nodes in an international web of the knowledge economy with quite a mobile workforce. Automatic local economic and social spill-over effects of innovation districts are therefore limited and often need intentional agency to be successful.

Kings Cross is a good example of this. It is located between some of the most deprived areas of England. The contrast between the surrounding council estates and the Kings Cross area could not be more be more pronounced. Argent makes big strides to connect with the local communities. It engaged over 50 schools and 3,800 pupils in on-site-activities, supported community groups and hosted public sports events. However, this a highly managed top down process with a clear agency; it is not a "natural" trickle down effect. This is evident in many of the most high profile innovation districts around the world.

In urban locations, innovation districts tend to create a disconnect between highly specialised jobs for an academic workforce and low paid service jobs for less qualified residents. It is difficult to bridge this gap in the short term. Most innovation districts provide outreach activities that complement the local education offer. However these measures have long term effects and don't necessary create a more socially balanced urban environment in the short to medium term.

Just another gentrification process?

The innovation district model could seem to be just a super-charged gentrification process in the name of innovation. Richard Florida who used to be one of the most vocal propagandists of the urban knowledge economy has most recently concluded that without active mitigation, the growth of the "creative class" inevitably results in social segmentation and segregation. Gentrification is the white elephant in the room of the innovation district.

Sometimes innovation districts can also become victims of their own success. The much famed "Silicon Roundabout" or "Tech-City" in London, where a whole ecosystem of IT companies mushroomed, suffers from increasing rent levels as tenants in the adjacent City of London start expanding into this newly attractive territory.

4 How to spread the Benefits of Innovation Districts to the Wider Community

4.1 Case study: The Invention Rooms, White City Campus Imperial College - Managed outreach

Description

The Invention Rooms are unique shared maker spaces on the Imperial College White City campus. The Invention Rooms accommodate high tech workshops, design studios and interactive spaces for innovation and collaboration between the College, the local community and commercial partners.

The building contains a community maker space (the “Reach Out Makerspace”) and the Imperial College Advanced Hackspace for college members. Both maker spaces share the same facilities (a venue and a cafe).

The Reach Out Makerspace is dedicated to hands-on activities aimed at engaging school children creatively in science, technology, engineering, and mathematics (STEM) subjects. Additionally it has community rooms with a variety of science and technology activities for local residents of all age groups. It is run by a team of full time mentors and supported by students who organise the maker challenge programme and the collaboration with local schools

Left

Map of the White City campus of the Imperial College with the Invention Rooms outside of the core campus area

Middle

The hackspace for the students is located in the same building as the reach out maker space and shares the same amenities

Bottom

Reach Out Makerspace

Key Figures

- 800+ people from the local community attended the opening
- 5 cohorts of 84 participants (43 of which were from local target schools) took part in the Maker Challenge
- 65 participants across 6 sessions took part in Maker Challenge Move Up Programme
- 60 participants participated in the Proto-Maker Challenge
- 150 students from 10 London schools and 100+ mentors took part in the Schools Challenge

Spectrum of response

Actors:

Bottom up — Top-Down

4 How to spread the Benefits of Innovation Districts to the Wider Community

4.2 Case study: Over-the-Rhine/Cincinnati - Social issues first

Description

Cincinnati's Over-the-Rhine neighbourhood provides an exemplary case of a city that has managed to revitalize a once deprived community while simultaneously addressing issues of social and economic inequity. The redevelopment plans ensure that existing lower income residents were positioned to rise along with the physical neighbourhood. Although not marketed as an innovation district, new businesses and technology accelerator, the Brandery, were supported by real estate investments facilitated by the non-profit Cincinnati Centre City Development Corporation (3CDC) and financed by a consortium of the city's Fortune 500 companies which form a dense cluster in the neighbouring central business district.

Parallel to the nascent start-up community, a maker's district has begun to develop in an historic site of brewing along the river. The district now includes four operating breweries and an incubator for food entrepreneurs operating out of renovated buildings. First Batch, a manufacturing accelerator, works out of the old Moerlein Ice House. The district was facilitated by a special "urban mix" zoning that allows light manufacturing and residential uses to exist side by side.

Over-the-Rhine is an example of a bottom up regeneration process that created the right conditions for an innovation district to flourish with the involvement of local stakeholders. However, this worked only with substantial philanthropic capital investments and governmental support.

Top
Aerial view of Cincinnati

Middle
Creating local identity through close consultation with local communities

Bottom
Rhinegeist, one of the new breweries in Cincinnati

Key Figures

- 129 ha
- $1.3 billion investments since 2004 by 3CDC
- 320 homeless shelter beds
- 1,534 housing units rehabilitated
- 178 new affordable housing units
- 162 historic buildings restored, including 2 parks

Spectrum of response

Actors:

Bottom up — Top-Down

5 Phasing
5.1 The different models

Setting the priorities
There is no one size fits all model for the development of an innovation district. The complexity of urban regeneration defies universal recipes. The Brookings Institute recommends starting with a thorough audit to identify issues in leadership, placemaking, innovation potential, assets and imbalances of the social structure. A suitable strategy can proceed from these observations.

It makes sense to distinguish four different models along development priorities.

Workplace-led
This is the traditional, most followed model and is exemplified in the adapted science park. It focuses on the creation of the right mix of employment through anchor institutions and commercial workplaces. Small enterprises, place-making, amenities and housing are less prioritised and cater to the needs resulting from earlier development stages. Although this seems to be a suitable, pragmatic approach, it comes with challenges. It can be difficult to retrofit workplace-led developments with residential or retail uses, and can lead to a narrow demographic range of the residents and local workforce. This model is also based on a commuting workforce, often with omnipresent car parks, like in traditional science parks. Without comprehensive development, it is difficult to convert the area into a pedestrian-friendly neighbourhood. Also this model is often driven by large organisations (such as AstraZeneca in Cambridge for example) who benefit from an ecosystem of small startups but also tend to dominate and control it. A good example where this dominance was successfully avoided is the Brooklyn Navy Yards in New York, which followed a workplace-led approach but concentrated on providing workspaces for SMEs to create an economically sustainable ecosystem. Only now, after almost 20 years of employment creation, the BNY start adding elements of placemaking, residential and retail to the development.

Placemaking-led
In this approach, the public realm and interim uses are prioritised alongside the development of the buildings. This strategy is guided by the idea that a well curated and developed local character is needed to attract the right tenants along with a young, dynamic demographic.

The public realm of Kings Cross, for example, was meticulously planned and choreographed before buildings were designed and before the key tenants decided to move to the area.

A looser, bottom-up strategy guided the development of StrijpS in Eindhoven, where much of its later development was preceded by large events, concerts, temporary artists' studios. This helped to create a successful place before any further steps followed.

The placemaking-led model can be very successful in terms of "rooting" an innovation district but relies on intelligent long term strategies along with potentially high upfront investments and often a long-term attitude.

Residential-led
In this approach, the focus is on building a healthy residential neighbourhood. A good example for the is Eddington Cambridge or Arabianranta where residential liveability are central to the development concept

Another variant of this strategy is to improve an existing neighbourhood with low rents and good demographic potential, like for example Hackney Wick in East London.

The people-first approach makes much sense as, after all, a successful knowledge economy is based on human resources. However, as with the workplace led strategy, the new neighbourhood might find it difficult to integrate new workspaces, let alone light industry. This can be a conflict from the outset or develop over time if the residential element starts dominating. This is the case with Arabianranta, Helsinki where public events conflict with the calm character and expectations of a residential area.

Mixed-Use
In this approach, the innovation district is conceptualised as a mixed-use neighbourhood from the outset. All uses grow incrementally. As obvious as this approach might seem, it is not always easy to implement. Different uses tend to have conflicting needs. The management organisation of a science park finds it difficult to deal with residential developments or a property developer is specialised in residential uses only and sees any kind of workspace as a liability to the operational security and asset value of the core investment.

The University Park at MIT and the Kendall Square development in Cambridge, Massachusetts as well as the new Imperial College campus in White City follow a more integrated approach of residential blocks next to commercial blocks. It needs to be noted that these developments are also successful because the ownership and management stayed within the one organisation so that conflicts can be mitigated as early as possible.

5 Phasing
5.2 Workplace-led case study: Cambridge Biomedical Campus

Description
The Cambridge Biomedical Campus is the largest centre of medical research and health science in Europe. It is home to a number of organisations including Cambridge University Hospitals NHS Foundation Trust, Royal Papworth Hospital NHS Foundation Trust, Abcam, the Wellcome Trust, Cancer Research UK, the university's medical school and the Medical Research Council. One of the biggest development under construction is AstraZeneca's global HQ and R&D centre which together with the Royal Papworth Hospital dominates the centre of the campus.

The Cambridge Biomedical Campus is clearly planned around large institutions and companies. There will be no residential accommodation in the near future and the limited amenities are primarily intended for employees.

Professionally the campus is a thriving community of innovative scientists and health workers. It is a substantial and unique concentration of research capability.

From an urban perspective however it contributes to commuting traffic and suffers from a sterile urban atmosphere typical of science parks.

Although there are new residential developments closeby (including Cambridge Abode) the campus and its surrounds do not yet constitute a walkable mixed use neighbourhood.

Key Figures
- 85 ha (including Addenbrooke's Hospital)
- 288,000 sqm office and research facilities (including Addenbrooke's Hospital)
- Expected workforce up to 30,000

Top
Campus masterplan

Below
AstraZeneca's global HQ and R&D centre

Middle
Royal Papworth Hospital

Bottom
MRC Laboratory of Molecular Biology

5 Phasing
5.3 Placemaking-led case study: StrijpS, Eindhoven

Description
In the 1990s Philips gradually left Eindhoven, a city that had been dominated and shaped by this technology giant. However the city managed the transition to a more diverse innovative tech and design ecosystem with a concerted public/private sector effort.

The reuse of the vacant Philips buildings at StrijpS, one of the largest Philips factories in Europe, played a crucial role in this success story. A public/private partnership transformed StrijpS into a creative metropolitan environment that appealed to international knowledge workers. Cultural events, such as the Dutch Design Week or large open air festivals, together with the provision of affordable workspace were used as catalysts to redefine the place and attract the right tenants.

It was a deliberate decision of Eindhoven's public administration to first develop a dynamic public event space that provided the character and "buzz" which attracted the right people. The right place should create the right economy.

What started in 2002 as a field of experimentation and urban entertainment is by now growing into a large, internationally respected innovation district complemented by a wide range of new residential and commercial developments.

Key Figures
- 26.7 ha
- 90,000 sqm office space
- 30,000 sqm of commercial, cultural and leisure facilities
- 2,500-3,000 dwellings
- Venue for large international festivals like the Dutch Design Week

Top
Aerial of StripjS

Middle
The Dutch Design Week attracts up to 395,000 visitors

Bottom
Phase 1 will develop a commercial and residential block in parallel

5 Phasing
5.4 Residential-led case study: Eddington, Cambridge

Description
Cambridge Eddington is not officially marketed as an innovation district. It is an urban extension by the University of Cambridge to provide housing for postgraduate students, postdoctorates and university key workers. These groups power Cambridge's innovation machine, but struggle to find affordable housing. The number of postdoctorates has grown by 160% since 2000. Postdoctorates are at the beginning of their academic career, innovative, internationally well connected, but also looking for a stable home, often for their young families too. The Postdoc Centre in Eddington ("a college without walls") offers a unique opportunity for accommodation and networking. In the next phase Eddington will provide a total of 100,000 sqm of commercial research facilities offering further networking and collaboration opportunities. Together with the existing young academic demographics, Eddington has the potential to develop into an innovation district par excellence, which will also support the wider Cambridge innovation cluster.

To support this academic community Eddington is designed as a sustainable, walkable neighbourhood with sufficient facilities, such as the acclaimed Eddington Nursery and Storey's Field Centre, a hotel and a care centre.

Key Figures
- 150 ha
- 1,500 homes for University and College staff
- 1,500 private houses for sale
- Accommodation for 2,000 postgraduates/postdocs
- 100,000 sqm of academic and research & development space
- Community facilities including the University of Cambridge Primary School, Storey's Field Centre, health centre and care village
- Retail
- Hotel

Top
Aerial showing the masterplan

Middle left
Research community at the Eddington Postdoc Centre

Bottom left
Eddington Postdoc Centre

Middle right
Eddington market square

Bottom right
Eddington Nursery and Storey's Field Centre

5 Phasing
5.5 Mixed-use led: Kendall Square, MIT Cambridge

Description
Kendall Square is a former industrial area north of the MIT in Cambridge MA, which has been developing into a high-tech hub since 2000. The MIT Kendall Square Initiative aims to intensify this area with a large mixed use development to extend its commercial research facilities and provide new housing likewise. The dense cluster of commercial and residential buildings is being developed in tandem and rooted in the urban fabric with the provision of new public realm and retail.

The Kendall Square Initiative signifies an important strategic shift of the MIT from iconic academic buildings like the MIT lab and the Ray and Maria Stata Center to a more nuanced, urban mixed-use approach. Urban design and placemaking has replaced iconic landmark design.

This case study shows how the innovation district paradigm might become a model for future university extensions.

Key Figures (Phase 1)
- 100,000 sqm GIA (all phases together 180,000 sqm)
- 425 residential units
- 58,000 sqm commercial space
- 1,800 sqm retail space
- 9590 sqm start-up space in re-purposed office accommodation
- 633 covered bicycle spaces
- 809 parking spaces

Top
Existing area around Kendall Square

Middle
Proposed developments

Left
Phase 1 will develop a commercial and residential block in parallel

6 Summary

Public Realm

– A vibrant, accessible and inclusive public realm is essential to facilitate social and professional interaction
– Uses that have public benefit and/or interface (eg. shops, cafes, open workspace, educational institutions) will help create a vibrant public realm
– Active programming of public realm is required to guarantee a diverse offer to a broad audience
– However, a public realm without commercial programme or top-down management can be more perceived as 'owned' by the local community

Residential

– Housing is an essential ingredient of innovation districts to provide informal networking assets that support professional ties
– Innovation benefits from the proximity of residential and employment spaces through the creation of holistic communities and replicating the characteristics of evolved mixed use urban areas
– Targeted housing can attract specific demographics to enhance the innovation workpool that might otherwise be priced out of the area, eg postdoc researchers
– It is uncommon to find more housing integrated more than at a block scale
– However, the co-location of employment and residential uses supports sustainable transport and a more vibrant public realm
– Successful integration of housing into existing science parks (rather than planning districts from scratch) requires mission-focussed agency to overcome commercial and operational pressures in the short and long term

Urban integration

– Social and economic benefit to existing local communities does not occur naturally through the mere co-location of adjacent high value economic uses
– Without a specific and deliberate outreach strategy, socio-economic divides will often be exacerbated
– Local spillover can be achieved through a clear and lasting agency in the form of outreach programmes, and support of community and school-based activities
– For an innovation district to become an agent of lasting local change it needs to be developed from bottom-up and address first the quality of local jobs and housing before high profile business and commercial uses can be added, for example through a cultural placemaking strategy

Phasing

– There is no formula as how to sequence an innovation district
– An early focus on either workplace or residential exclusively can only lead to difficulties integrating the two uses later
– However mixed-use developments can create management and commercial challenges especially when these are brought together at the building or plot scale
– Prioritisation of public realm can be useful in attracting the right tenants and residents but can require large upfront investments in the form of money or time
– Meanwhile/early stage placemaking efforts can transform the perception of sites in advance of investment in innovation

7 Recommendations

Vision

– Undertake an upfront audit of leadership, placemaking, innovation potential, assets and imbalances of social structure

– Establish a clear vision articulating in what specific ways an innovation district is more than a mixed use neighbourhood

– Establish a partnership to oversee the deliver of the innovation district, particularly with respect to achieving common goals

– Establish the extent of the local authority's role in counterbalancing purely market forces

Public realm

– Plan a network of vibrant, accessible and inclusive public spaces

– Maintain a critical amount of public realm activity through an appropriate level of active programming

– Flexibly plan and manage the public realm so that it can grow with the community

– Balance management between council/corporate organisations and local stakeholders

– Especially in the case of privately-managed public space, set out a code determining the limits of appropriate behaviour and appropriate management

Spectrum of response

Content programming:

Passive ⟷ Active

Management:

Permissive ⟷ Restrictive

Residential (use)

– The appropriate housing offer should be designed to attract the right demographic base of an innovation district

– Housing needs to be spatially mixed with other uses at no less than at a block level. Segregated residential "sub-neighbourhoods" should be avoided

– An appropriate amount of housing should be subsidised to attract the right demographic base to support an innovation ecology

– Housing should be located within walkable distances to workspace and other amenities throughout the district

Spectrum of response

Balance of uses:

Less resi ⟷ More resi

Integration of uses:

Less ⟷ More

Above
These scale bars are intended as a simple diagnostic tool to assist in the establishment of a vision.
They recognise that the strategic response will lie within a spectrum against each of the themes identified

Urban integration

– Establish a partnership across multiple local and city-wide stakeholders to plan, deliver and manage a programme of social outreach
– Engage local school and community groups in the formation of a wider innovation spillover strategy
– Require companies and institutions to contribute to this strategy
– Establish a priority list for community contributions and company sponsorship
– Plan space for social outreach programmes to have a permanent physical presence

Phasing

– Plan for proportional delivery of housing and workspace in every phase
– Forward deliver infrastructure including public transport, highways, landscape and public realm
– Utilise the potential of the entire site from the outset through meanwhile programming

Spectrum of response

Actors:

Bottom up Top down

Contact

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