

Here Be Startups: Exploring a young digital cluster in Inner East London

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Abstract

The digital industries cluster known as 'Silicon Roundabout' has been quietly growing in East London since the 1990s. Rebranded 'Tech City', it is the focus of huge public and government attention. National and local policymakers wish to accelerate the local area's development: such cluster policies are back in vogue as part of a re-awakened interest in industrial policy. Surprisingly little is known about Tech City's firms or the wider ecosystem, however, and cluster programmes have a high failure rate. We perform a detailed mixed-methods analysis, combining rich enterprise-level data with semi-structured interviews. We track firm and employment growth from 1997-2010 and identify several distinctive features: branching from creative to digital content industries, street-level sorting of firms, the importance of local amenities and a lack of conventional cluster actors such as universities or anchor businesses. We also argue that the existing policy mix embodies a number of tensions, and suggest areas for improvement.

Keywords

Cities, digital economy, clusters, London, Tech City

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<p style="text-align: center;">FORTHCOMING IN ENVIRONMENT AND PLANNING A PLEASE CITE ACCORDINGLY</p>

1. Introduction

Since the late 1990s, a vibrant high-tech scene has been developing in Inner East London. Neighbourhoods around Clerkenwell, Shoreditch, Hoxton and Haggerston form the core, with the Old Street roundabout – 'Silicon Roundabout' – at its heart. Since 2010, enormous attention has been focused on the area. The UK Government has rebranded the district 'Tech City', aiming to build it into 'one of the world's great technology centres' (Cameron, 2010). Ministers have expressed the predictable desire to grow 'the UK's Silicon Valley' in East London (Nathan, 2011). Officials have sought to attract large-scale foreign investment and to expand the cluster's boundaries, developing a further site inside the Olympic Park (Osborne and Schmidt, 2012). The London Mayor and East London boroughs are keen to make their mark too, and so there has developed a fast-moving raft of national and London-level policies covering finance, workspace, connectivity, business development, immigration, public-private competitions and research collaborations. A new agency was also established to lead the 'cluster's' development: the Tech City Investment Organisation (TCIO), now rebranded and re-scoped as Tech City UK.

Inner East London also matters to researchers. First, the area is a known creative industries district, and one that has evolved without active policy measures (Evans, 2009; Hutton, 2008; Pratt, 2009). Second, as an inner urban zone rooted in craft industries, light manufacturing and warehousing (Hall, 1962), 'Silicon Roundabout' differs dramatically from high-tech archetypes such as Silicon Valley, with its low-density sprawl and origins in hardware and military research (Saxenian, 1994); it also stands out from top-down 'official' clusters in France, Russia and Malaysia (Bresnahan and Gambardella, 2004). Finally, we have notably few facts about the area's new digital layer, even a count of firms: 'official' estimates vary

from 410 to over 1100 (Nathan et al., 2012). These knowledge gaps raise serious policy questions: given that cluster programmes have been largely unsuccessful (Duranton, 2011), policymakers need to get the mix right.

These local concerns echo larger debates about the scope of industrial policy (Rodrik, 2004). Recent years have seen a renewed interest in active industrial management (Aghion et al., 2013; Foray et al., 2012). US and EU policymakers have endorsed cluster programmes, via Regional Innovation Clusters and Smart Specialisation respectively (McCann and Ortega-Arguilés, 2011; Yu and Jackson, 2011). Tech City fits UK Ministers' renewed interest in 'industrial strategy' (Cable, 2012; Department for Business Innovation and Skills, 2012) and is seen as 'key' to the Government's growth plans (Osborne, 2012).

This paper performs a detailed mixed-methods analysis of the Inner East London digital ecosystem, and assesses its future prospects. It is one of very few detailed explorations of these issues. There are multiple policy papers (BOP et al (2011) and McKinsey (2011)) but we know of only two primary studies: Vandore (2011) surveys companies on Wired's 'Silicon Roundabout' list (see section 3); Foord (2013) combines small area mapping with a firm-level survey. We use rich enterprise-level data to track the cluster from 1997-2010, and conduct over 30 semi-structured interviews. We also explore early impacts of Tech City, and speculate about likely longer-term effects. We thus build on the extant literature on East London, exploring the area's latest sectoral and spatial shifts. For precision we focus on businesses: we touch on, but do not directly explore the wider social impacts of the Tech City initiative.

The paper is organised as follows. Section 2 sets out key definitions and concepts, and reviews relevant empirics. Section 3 outlines our methodology and data sources. Sections 4 and 5 discuss our quantitative and qualitative empirical strands, respectively. Section 6 concludes.

2. Framework

Our analysis is grounded in four phenomena: structural shifts in the ‘digital economy’; the affordances of cities for digital firms; how such firms organise in urban space; and the (un)intended impacts of cluster policies. We discuss each in turn.

2.1 The ‘digital economy’

The Inner East London system is increasingly a ‘digital economy’ cluster. The ‘digital economy’ encompasses a set of industries, outputs *and* inputs used at varying intensities across the economy as a whole (Centre for International Economics, 2005). In sectoral terms, digital businesses include ‘Information and Communications Technology’ (hence ICT) and ‘Digital Content’ industries (Department for Business Innovation and Skills and Department for Culture Media and Sport, 2009). We use these BIS-DCMS SIC codes to roughly delineate sector space.

Such high-value activities are structural features of post-industrial economies, with historic links to established manufacturing activities (engineering, electronics) and cultural products (publishing, advertising, design) (Hall, 2000; Scott, 1997). Technological shifts have

foregrounded the digital element – notably mobile internet, social media and cloud platforms, as well as Big Data analytics and 3D printing technology (Foresight Horizon Scanning Centre, 2010). Content industries are fusing production and distribution, and operating across multiple online/offline platforms (Cities Institute, 2011). Small-scale artisanal manufacturers – ‘makers’ – are also emerging, especially in larger urban cores (Moretti, 2012).

2.2 The post-industrial city

As with other advanced producer services and ‘neo-artisanal’ activity, digital businesses tend to cluster in inner urban space. Such urban industrial districts are nothing new (Jacobs, 1969; Marshall, 1918) but are increasingly salient in post-Fordist economies, or what Scott (2014) calls ‘cultural-cognitive capitalism’. In large cities such as London, these milieux play important productivity-enhancing roles (Glaeser, 2011; Hall, 1998), and generate high-value consumption possibilities (Hamnett, 2003; Zukin, 1982).

Digital and creative industries are knowledge-intensive, with low entry barriers – so feature large numbers of small, young firms: Big, economically diverse urban cores act as ‘nurseries’ for start-ups and SMEs (Duranton and Puga, 2001; Jacobs, 1969). Case studies and econometric work (Glaeser et al., 2012; Saxenian, 1994, 2006) show that initial levels of entrepreneurial activity help predict subsequent economic growth: this implies that clusters will often develop from earlier ‘versions’ of themselves (Boschma and Frenken, 2011; Duranton, 2007).

Inner East London exemplifies both macro change and local ‘branching’. During the 1980s the area experienced severe deindustrialisation, opening up substantial vacant floorspace (Pratt, 2009). A secondary office market emerged in the 1980s, and the area became home to business services and creative firms, plus a first generation of loft-dwellers (Hamnett and Whitelegg, 2007). In the 1990s artists played a crucial role in re-imagining the area, encouraging further creative and (then) ‘new media’ arrivals, as well as a growing residential population attracted to the vibrant night-time economy (Harris, 2012; Hutton, 2008; Pratt, 2009). Today’s ‘digital layer’ should be seen in the context of these earlier – and still current – production and consumption systems.

2.3 Digital organising logics

How firms organise production, distribution and sales will help determine the look and feel of a cluster. Industrial districts exhibit multiple ‘cluster shapes’ (Kerr and Kominsers, 2012): in digital content activities there is a strong tendency towards ‘micro-clustering’, with densely arranged and linked firms and supporting actors (Chapain et al., 2010). Inner urban neighbourhoods such as East London, New York’s Silicon Alley district and downtown San Francisco offer lower rents than the CBD, but also attractive physical/cultural features (Hutton, 2008). Formal production activities are labour-intensive, dependent on complex information that requires face-to-face communication (Arzaghi and Henderson, 2008; Charlot and Duranton, 2004; Storper and Scott, 2009). At the same time, the predominance of small firms and freelancers mean that untraded interdependencies are central: information, contacts and opportunities are exchanged alongside products and services (Grabher, 2002; Storper, 1997). ‘Soft infrastructure’ such as bars and cafes helps in sourcing collaborators and opportunities, and offers places to get work done (Currid, 2007). Physical boundedness also

helps establish spatial consciousness, especially via ‘resonant landmarks’ (Hutton, 2006): Hoxton Square denoted East London’s 1990s cultural energy; Old Street roundabout symbolises the new, digital iteration.

Digital and creative firms also deploy spatially *extended* workflows, global ‘pipelines’ as well as local ‘buzz’ (Bathelt et al., 2004). Low-cost digital sourcing, storage, communication, marketing and sales platforms increasingly permit SMEs and micro-businesses to operate as ‘micro-multinationals’ (Varian, 2005). These technological opportunities – and competitive pressures to outsource – may also uproot some production-side activities from local milieux (Pratt and Jeffcut, 2009). We explore these multiple geographies below.

2.4 Area policies for the digital economy

In theory, clustering should occur ‘organically’, as firms sort into optimal locations (Glaeser, 2008). In practice, this may not occur because of poor decisions, imperfect information, lack of finance or other constraints. Cluster externalities thus create an in-principle case for policy intervention (Nathan and Overman, 2013).

Most area-based industrial policies are Porter-style ‘cluster programmes’ (Porter, 1990; Porter, 2000). These emphasise physical location as a container for interacting firms, upstream / downstream linkages and supporting industries; and seek to replace traditional sectoral interventions with an area-wide strategy. Such approaches have been criticised on conceptual grounds (Duranton, 2011; Martin and Sunley, 2003) and empirical analysis tends to find little impact of cluster policies on area-level outcomes (van der Linde, 2003).

Questions also remain about the appropriate roles of FDI, export promotion, public

procurement policies, and U-I linkages (Aghion et al., 2012; Javorcik, 2004; Lawton Smith and Bagchi-Sen, 2011; Uyarra and Flanagan, 2009).

One key criticism of cluster programmes is that they ignore negative feedback channels. Agglomeration economies help firms in cities become more productive; as the cluster grows, though, co-location costs also rise as firms compete for limited resources (Combes et al., 2005). Similarly, clusters generate and attract new entrants, who may enhance knowledge spillovers, increase levels of competition or both (Markusen and Venables, 1999). If competition forces incumbents to innovate and push out weaker firms, this raises *aggregate* productivity but there are individual winners and losers (Aghion et al., 2009). Policymakers will thus need to balance raising overall (national) welfare, with the desire to build (area-level) cluster competitiveness (Acemoglu et al., 2013; Aghion et al., 2012). Similarly, growing clusters increase competition for physical space; in the case of East London digital firms face pressures both from competing industrial users – especially financial and professional services firms (Pratt, 2009), and from a growing, high-yield residential property market (Hamnett, 2003; Hamnett and Whitelegg, 2007).

Until Tech City, Inner East London had seen little direct policy intervention. The 1990s ‘City Fringe’ programme was a ‘pepper-pot of spatial initiatives’ with little co-ordinated strategy (Pratt and Jeffcut, 2009) [p 1045]. Relaxations in planning use classes and funds for refurbishment of landmark buildings seem to have small, indirect effects (ibid). How might a major policy shock such as the Tech City initiative affect the area? We can anticipate a combination of channels: 1) area reputation effects; firm entry leading to 2) knowledge spillovers and/or 3) increased competition; and 4) property effects, where policy amplifies land use competition and property costs for local firms.

3. Methodology

Our empirical strategy has two strands. First, we conducted microdata analysis from 1997-2010 using the Business Structure Database (BSD), a firm-level dataset that provides a near-universe of UK businesses (Office of National Statistics, 2012). This gives us a detailed fix on the district's size and long-term evolution, as well as patterns of co-location. Note that the BSD excludes firms with turnover below the UK sales tax threshold, and those without employees on the PAYE system. As such, it likely undercounts digital economy firms, although employment estimates will be largely unaffected.

Second, we used semi-structured interviews with local firms and stakeholders. This allows us to get a 'street-level' sense of the cluster, firms' location choices and workflows, and to get an early sense of Tech City impacts. The firm sample is taken from the Tech City Map, the largest business directory for the area.¹ We drew a random sample of 100 firms.² Within the sample we identified five firms from Wired Magazine's 2010 list of 'Silicon Roundabout' businesses (Wired UK, 2010). These are likely to be older, more established and successful companies. Phone and email contact yielded 36 face to face interviews held at 34 companies, all with founders / senior managers. We also assembled a non-local control group using the DueDil/Tech Hub list of London's 'real tech start-ups' (DueDil and TechHub, 2011), conducting three semi-structured phone interviews. Finally, using snowballing, a series of face-to-face stakeholder interviews were conducted across the public and private sectors.³

¹ www.techcitymap.com, accessed 24 June 2013.

² Random sampling without replacement, n = 1050 firms.

³ Interviews were anonymised and transcribed. Manual text coding was done using Dedoose.

4. Findings: quantitative

4.1 Mapping

Inner East London has multiple foundational geographies. As noted in section 2, the area still exhibits physical traces of its industrial past, as well as more recent cultural, leisure and residential layers. These production and consumption regimes are still active; as we shall see, the digital economy layer is closely intertwined with all three.

The ‘City Fringe’ creative industries initiative mapped a continuous policy space in the area, but this bore little relation to activity underneath (Pratt and Jeffcut, 2009). The first attempt at mapping the area’s *digital* layer was serial entrepreneur Matt Biddulph’s speculative, unserious ‘Silicon Roundabout’, invented as a joke at an industry party. Written up in the *Financial Times* (Bradshaw, 2008), the idea gained currency and Wired magazine later expanded the list from 15 to 42 companies (Wired UK, 2010). Launched in 2011, the Tech City Map provides a further, live mapping of over 1,000 digital economy firms.

None of these surveys is designed to be comprehensive, however. . Our analysis re-maps the cluster using richer, time-consistent data. Rough mapping using BSD aggregates indicates a series of digital economy employment hotspots (Figure 1). Inner East London is at the eastern end of this corridor, spanning the boroughs of Islington, Hackney, the City and Tower Hamlets. Within the area we identify three ‘core wards’ – Clerkenwell, Hoxton and Haggerston – and nine ‘wider wards’ – the three core wards, plus Bunhill, Cripplegate, Portsoken, Spitalfields, St Peter’s and Whitechapel.

Figure 1 about here

The mapping highlights the spatial continuity with other creative economy hotspots in London. Echoing Foord (2013) we also find suggestive evidence of ‘micro-clustering’: ICT and digital content have subtly different employment geographies.⁴ This suggests both close interactions between firms, and the localised knowledge spillovers typical of an industrial district. Our qualitative analysis confirms this (see section five).

4.2 Counting

Next, we use BSD data to track firms and employment from 1997-2010 (the latest available data at the time). For 2010, we find over 1,500 firms in core wards and over 3,000 in the wider area. Note that these are substantially higher than official counts, even with under-counting built into the data structure.

Figure 2 about here

Overall, firm counts have doubled from 1997-2010 (Figure 2). We can see four phases in the area’s development: slow growth in the late 1990s, peaking in the dot-com boom; accelerating growth in the early 2000s; and a tailing-off as the UK entered recession. Content firms drive growth to a striking extent: these businesses have closest functional and product linkages to the wider creative economy, and this is suggestive of branching from creative industries towards digital. Note also how much action occurs *before* the area’s unofficial ‘naming’ as Silicon Roundabout in 2008, and its official ‘branding’ as Tech City in

⁴ Results available on request.

late 2010. Company registrations have risen substantially since 2010, but only a fraction of these will scale enough to enter the BSD.⁵

Turning to employment, the digital economy supported over 48,500 jobs in 2010, with the biggest share in digital content (Table 1). Digital employment rose rather faster in Inner East London than in the city as a whole, more than doubling between 1997 and 2010, versus a 44 percentage point jump in Greater London. Notably, while Greater London's digital job counts *fell* by 16,000 in 2009-2010, they rose inside the cluster. This was driven by digital content sectors, with falling employment in ICT businesses.

Table 1 about here

These local trends reflect wider post-industrial dynamics in the capital and the larger economy. As a share of the Inner East London employment base, the digital economy has become increasingly dominant, rising from around 5% to over 15% of all jobs in the period (Figure 3). The area is notably denser in digital jobs than shares in Greater London and the rest of the UK. However, employment shares flatten off in the mid-2000s. As total job counts for Inner East London have *risen* during that period, this suggests some diversification in the wider local economy.

Figure 3 about here

We also conducted further within-sector analysis: the ICT sub-sector is dominated by telecoms and computer hardware consultancy, while digital content is more diverse, with

⁵ <http://www.ft.com/cms/s/0/affb7498-ed52-11e2-ad6e-00144feabdc0.html> (accessed 30 September 2013).

software consultancy, advertising, radio and TV, news and publishing taking the largest shares.⁶ Again, this implies branching towards ‘creative digital’ activities. Exploratory analysis by the Tech City Map indicates the huge diversity of content activities within these broad categories: a recent survey of 774 Tech City Map firms found that 16% work in digital marketing, and more than half are ‘creative tech’ firms such as 3D and animation designers (Star, 2011).

5. Findings: qualitative

We begin with pen-portraits of firms and their founders; then discuss ways of working, affordances of the area, perceived challenges and views of policy.

5.1 Founders and firms

Our interviewees were predominantly male, white and UK-born. The group was notably less gender and ethnic-diverse than the local community, or the average London start-up.⁷ Over 40% were in their 30s, with 2/3 over 30; this differs from the popular image of young tech geniuses, but echoes other studies (Wadhwa et al., 2008). In particular, those from the ‘Wired list’ – generally more established businesses – were exclusively in the late 30s age bracket. Some of these latter were classic serial entrepreneurs, active since the dot-com boom. The sample was also highly educated: almost all had a degree, around a third had postgraduate qualifications (not all in computer science) and around a third were Oxbridge graduates.

⁶ Full results are available on request.

⁷ Sample descriptives compared with Greater London means from the 2010 Small Business Survey.

21 out of 34 firms were less than five years old, a lot younger than the Greater London SME average (7.9 years) and the UK digital economy average (7.6 years).⁸ Half the sample consisted of start-ups – companies less than three years old - – a little less than the 60% identified earlier by Vandore (2011). All the firms are SMEs. Over half were micro-businesses (10 employees or less); a third were small businesses (11-50 employees) and five were medium-size (51-250 employees). Six were branches of larger businesses, often deliberately placed; one had recently been acquired by a large multinational.

Activities ranged from software development to viral media to digital PR. Echoing the quantitative analysis, the bulk were in digital content industries, although a few might be placed in ICT sectors such as ‘computer hardware consultancy’. Perhaps not surprisingly, less than half (15/34) considered themselves ‘tech’ companies:

To be honest it's virtually impossible to explain what we do. ... we are a tech company definitely but we are also equally a creative company. (E12, C11)

Most people [here] are from an engineering or a computer science background. But ... we probably see ourselves as a games company now. (E23, C21)

5.2 Ways of working

East London firms exhibited both spatially bounded and extended workflows, echoing Bathelt and colleagues’ (2004) analytical frame. Core teams were typically located locally, along with networking, selling and business development functions. But we also uncovered

⁸ Sample descriptives compared with 2010 SBS data. Unless otherwise stated, ‘firms’ refers to enterprises. In a few cases, sites visited are local units of a larger business.

internationalised operations: around 40% of firms (14/34) had bases in more than one country, the majority in two to four locations, with a couple of present in six or more. Interviews highlighted both technological and economic drivers of these decisions:

It's one or two people in all of those countries ... getting business and using freelancers to deliver. And coming back to us for advice on intellectual property and things like that. (E2, C1)

You can find very highly skilled IT people based in Russia and the Ukraine, for about a third of the price of the UK or even less, and they work harder, you haven't got to manage them so much because they can work from home over there. (E11, C10)

This was a combination of the accidental and the strategic. One team had opened a 'New York office' because they wanted to work with a strong programmer living there. Others made low-cost attempts to internationalise – for example, buying a US landline number that re-routed calls to the founders' UK mobiles. Customer networks also had multiple geographies, with firms selling to the rest of London, UK-wide or internationally. Local customers were notably sparse – but many firms appreciated the proximity to large Central London markets.

5.3 The area

Despite these multiple geographies, firms' overall views of the area suggest a classic industrial district. Differences between location decisions of older firms (and founders) and

younger businesses highlighted the cluster's rapid growth. For older firms, the decision was often by chance: founders lived nearby, or had been offered free/cheap space:

So we ... [found] literally a room above a pub ... spent £50 on the cheapest possible IKEA furniture, and moved in there. ... [We] just more or less stumbled on the fact that this was a really good part of town to be in. ... [By] word of mouth, other friends ended up renting other rooms... and you started to have that tiny network effect. (E18, C16)

By contrast, younger businesses (especially start-ups) had made deliberate choices, often informed by awareness of 'Tech City':

First of all, this [co-working] place was half as expensive as any serviced office. And secondly, there was an article in the Economist... and we saw that ... and said, 'well, there's a lot going on.' (E6, C5)

The area provides a number of advantages. Some of these reflect basic urbanisation economies (central location, physical accessibility, relatively cheap space), while others indicate locally-specific socio-cultural features. Many interviewees talked about the area's 'buzz', which was used variously to denote: amenities and nightlife, which acted as a kind of social wallpaper to attract and maintain staff; a source of ideas, with Shoreditch subcultures providing inspiration for content; and a source of production-side collaborators. In the latter case, professional and social networks, serendipitous meetings and the area's 'soft infrastructure' played enabling important roles. Amenities – especially food, coffee and nightlife – were discussed in terms of production as well as consumption:

You have no problem, ever, persuading someone to work here. Whereas, if we were on a Science Park in Newbury, I'm certain we wouldn't find good calibre developers when we needed them, or that if we could they wouldn't want to move to where we were. (E32, C30)

If someone's sort of interested in streetscape and visual culture then this is a good place to be. There's lots of new ideas, inspiration ... we work a lot with creative agencies ... It helps that we have a sense of what's fresh and what's new. (E28, C26)

I like the fact that you bump into interesting people or that you might sort of read something that someone's written online and then meet them down at the pub. ... when I worked in South Kensington that never happened.(E8, C7)

Despite the use of global 'pipelines', this layering of local economic, social and cultural features helps create a bounded milieu. Such affordances also help shape firms' location choices *within* the area, with interviewees displaying a strong sense of physical community, and awareness of the resonances of specific locales and landmarks. Echoing our mapping, we found evidence of careful sorting on very tight geographies: for example, one social media firm had moved, as it grew, four times since its inception – staying within the same 200-metre radius of Brick Lane.

I don't want to move anywhere else. I wouldn't ever dream of going to Soho. I would probably go kicking and screaming to Clerkenwell. (E16, C14)

For most, these upsides vastly outweigh the negatives: in many interviews firms had to be actively prompted on the latter. The most common complaint was rising rent, a structural issue we return to in sections 5.5 and 6. Other complaints included the ugly streetscape, lack of amenities for mothers, and the lack of obvious ‘Tech City’ signifiers besides the roundabout. Notably, given the area’s impoverished ‘East End’ reputation (Harris, 2012; Pratt, 2009), crime was only mentioned twice.

5.4 Future challenges

Firms highlighted various growth barriers, in particular access to finance, finding and retaining skilled workers, and management capacity (Table 2). These are mostly generic to SMEs, but with digital economy ‘twists’ that render them harder to overcome. Some of these twists stem from globalised industry structures; the inherent riskiness of digital economy activity; others are East London-specific, and lie in the newness of the area’s digital layer.

Table 2 about here

The inability to find skilled staff was often the most important issue raised by firms. Interviewees argued that there was an undersupply of skilled developers in the UK, forcing them to rely more on migrant workers. Given the global structure of the tech industry, this often meant hiring from outside the EEA (especially North America, South or East Asia):

No [UK] education coupled with visa restrictions is not a particularly good combination. (E6, C5)

In turn, current UK migration rules caused problems, especially the (real and perceived) bureaucracy involved in processing applications. Firms were typically too small, or lacked capacity, to take advantage of more relaxed rules on inter-company transfers. (The oft-cited ‘Entrepreneur Visa’ may raise the supply of new firms, but has no effect on *existing firms* seeking skilled staff.)

Technology investment is high-risk, and investors need to be both brave and very well-informed, something not always true of UK venture capital. We found three groups of firms: a small group able to rely on personal contacts; a bootstrapping group (who as a result, often felt unwilling to look for external later stage finance); and a third group needing to look for angel or VC money, with mixed results. Many complained about UK investors’ risk-aversion, small size and focus on established prospects:

In Silicon Valley you can get investment based on an idea. And that’s because they’re used to investing in tech. (E2, C1)

Investors need to understand what tech investment is all about ... [It’s] VC investment with high risk, very improbable returns. I’ve been in VC for four years now and it’s quite hard to educate someone around this. (S1)

We need a second round of funding to actually develop [our product]. If we were in the US we would probably have gotten it all at once. But we’re not in the US. So we’ve had to split it up into a number of small steps. (E24, C22)

This last point echoes other UK research (Lerner et al., 2011; Marston et al., 2013; Reed, 2010). The UK co-funds 10 Enterprise Capital Funds, but only one of these, Passion Capital, is London-based and a digital specialist. And only a handful of banks, VCs and angel investors specialising in the digital economy are physically located in the area.⁹ The East London cluster is still embryonic: as a result, inexperienced investors are often reacting to business plans from new, untried companies. Crucial non-market goods – information, experience and expertise – remain unevenly distributed. One interviewee remarked on the lack of ‘elder wisdom’ in East London compared to the US West Coast, ‘where I’ve had my most useful conversations’:

It’s either being able to call someone when you’ve got a problem ... a web server scalability problem, or whether you’re about to raise a round of funding and you’re wondering what to do about, you know, salary rises for your early employee or issuing equity ... (E18, C16)

Older entrepreneurs and venture capital providers in London we spoke to were often happy to help with advice – but young entrepreneurs lack networking skills or gravitate to the ‘beer and pizza’ events where they talked with each other, rather than older, more experienced players (S1, S4).

5.5 The Tech City initiative

Contrasting messages about Tech City emerged from our interviews. At the time, awareness was lower than expected: around a third of interviewees had little or no knowledge about the

⁹ This has been changing since the primary research period, with Silicon Valley Bank and other investors opening offices in the area.

initiative (likely to be vanishingly small now). Those with views split down the middle.

Optimists welcomed the attention Tech City could bring:

Tech City's great. I think all of this helps to push the ecosystem generally, because it gets into people's minds ... (E24, C22)

It's creating a lot of similar-minded people in the area as well, and all of those people can feed off each other and the different ideas, the sense of community, can really make each of their businesses better. (E11, C10)

Pessimists – usually the older firms or more experienced founders – were more sceptical:

Tech City is what government people call it. I don't think I've heard anyone call it Tech City without sort of air quotes. (E18, C16)

My personal perception of Tech City is very much a government jumping on the bandwagon, and sticking a label on it. (E23, C21)

Interviewees showed little interest in relocating to the Olympic Park, which was seen as physically disconnected from Shoreditch, and lacking its critical mass:

It feels like the kind of thing where there'd be a first user disadvantage to that space. There'd be a worry that you would be moving out onto a tumbleweed strewn cul de sac, and would be cut off from the vibrancy ... associated with this particular area. (E33, C31)

For us it is not an option to be based in Stratford. Because we have to be in close proximity to our clients. (E5, C4)

In fact, local connections to Stratford are excellent, even if the Olympic Park is harder to reach. The mental geography of Shoreditch is strongly embedded in collective awareness, however, meaning Stratford is perceived as ‘very far away’.

These challenges highlight the hurriedly assembled branding concepts at the time, as well as some underlying policy tensions. The Tech City Investment Organisation (TCIO) was intended to be locally-focused and independent, but was funded by UK Trade and Investment (a national agency) and has had to mediate multiple political agendas. As one of the interviewees in Vandore (2011) put it at the time:

Everyone’s got different agendas. UKTI is clearly inward investment nationally, the GLA [Greater London Authority] is London, No.10 is Cameron’s interests.

The policy brand, geography, institutions and personnel have since gone through multiple changes: the new agency, ‘Tech City UK’, has both a London and UK-wide remit, is now funded through the GLA as well as UKTI, and is on its third chief executive in four years. We return to this instability in the next section.

At the time of the research, only suggestive evidence of policy impacts was available. No one doubted that ‘Tech City’ had raised the area’s profile: as noted above, it was already influencing location decisions for younger firms. It was impossible to tell whether new entry

has been felt most keenly through the spillovers or competition channels, although some expressed worries about poaching of ideas and staff. However, significant property market effects were already evident. Around 40% of interviewees were worried about the cost and availability of office space, with many already contemplating relocation:

One of the disadvantages of being in an area that's getting trendier and trendier and trendier is that the rents are going through the roof. (E29, C27)

The property and development sectors were already shaping both cluster perceptions and real operating costs. Locally, the real estate industry has historically played this role; Harris (2012) (p234) argues that *'the aesthetic boundaries of Hoxton [in the 1990s] were produced as much by property developers as by artists.'* This also seems to be true the area's digital incarnation, with interviewees linking public policy interest, re-imagining and re-selling the area, rising rents and growing competition for space. As a senior GLA politician put it at a project seminar:

Even if a third of firms in Tech City haven't heard of it, you can bet every estate agent has. (S9)

6. Discussion

Inner East London's digital economy is a striking example of the 'new economy of the inner city' (Hutton, 2008). It exemplifies the shifting sectoral mix of the post-industrial metropolis, and highlights the deeper changes in technological standards and industry structure that play

out in urban space (Evans, 2009; Pratt, 2009). We trace the sectoral shift from late-1990s ‘new media’ and advertising towards a much larger and more integrated digital economy, complementary to these previous layers. Similarly, we show the spatial evolution of the area from ‘Shoreditch’ and ‘Clerkenwell’ towards a continuous, dynamic production space – although these older neighbourhoods remain in play as local mental geographies.

The cluster is also distinctive in terms of organisational behaviour. Local firms’ workflows reflect the (perhaps paradoxical) importance of agglomeration economies, face-to-face contact and physical boundedness for digital economy businesses, alongside socially embedded relationships. There is also clear clustering even *within* a tightly-defined production zone, but at the same time, we uncover spatially extended production chains, alongside multi-scalar sales geographies. Many of the ‘traditional’ key actors in high-tech clusters, such as major employers, activist universities or ‘Triple Helix’ activity are absent. Interviewees also highlight the relative thinness of the supporting institutions and a sparsity of both industry experts and auxiliary services – although anecdotal evidence suggests business services are increasingly present.

The area’s digital economy has evolved in organic fashion, with little direct policy input until recently. The launch of the Tech City initiative in 2010 hugely raised the area’s profile, and may have created an inflection point in its development. However, the policy mix to date has been problematic. Early Tech City strategy had three goals: to develop the area, to raise levels of FDI, and to generate a halo effect for the Olympic Park. This research has highlighted the tensions between these objectives.

First, the neighbourhood scale and global city backdrop places Silicon Roundabout closer to New York than California; Silicon Alley, not Silicon Valley. Second, the impacts of FDI on incumbents are not straightforward, and may generate benefits (via knowledge spillovers) or costs (via competition): the quality and absorptive capacity of incumbents matters (Meyer and Sinani, 2009). Given the embryonic state of the cluster, simply maximising the *level* of investment is unhelpful if the aim is also to develop domestic competitiveness. Rather, policymakers should to attract *complementary* investments (such as finance providers and auxiliary services), as well as helping local firms to internationalise.

Second, the Olympic Park is not a credible extension of the Shoreditch cluster. The ‘HereEast’ site is a natural campus space for large organisations: not surprisingly, the first tenants include a university (Loughborough) and a multinational (BT).¹⁰ But there is no compelling locational logic: there are already a number of digital economy hotspots (and property markets) around the city (Savills, 2012). Analogies to Canary Wharf are misleading – technology firms have far more spatial choice than financial services firms did in the 1990s.

Encouragingly, recent TCIO and Tech City UK strategy documents have emphasised the need for indigenous firm development, including mentoring, skills and export promotion (Tech City Investment Organisation, 2012; Tech City UK, 2013). However, Tech City UK’s set-up arguably bakes in these tensions. The new agency aims to promote tech growth in both London *and* the UK; funding comes from London government (via the city’s inward investment agency) *and* through national government (via UKTI). Given the complexity of public–private relationships shaping innovative activity (Freeman, 1987), governance of cluster programmes will always be challenging. Many issues identified here are not amenable

¹⁰ <http://icitylondon.com> (accessed 24 June 2013).

to area-based cluster initiatives: in particular, finance markets, skills and migration policies involve largely or wholly national policy levers. This multi-level issue set calls for careful governance, bringing together local private sector actors, local public actors and national players. The development agency's shifting policy stance and ambiguous institutional architecture is illustrative of these difficulties, as well as tension between government layers and with tech clusters elsewhere in UK, some s envious of the capital's profile.

UK policymakers also need to be realistic about the agglomeration diseconomies and creative destruction inherent in this growing cluster: failure rates are high, and preserving incumbent positions may come at the expense of achieving wider welfare goals. Conversely, crowding and rapidly increasing costs may disrupt cluster growth in ways that activist policy could (partially) manage. There are fewer signs that these deeper tensions are being addressed.

At the time of writing, new features are emerging. First, there are signs of further branching, notably the emergence of financial services technology ('fintech'), which takes in peer-to-peer lending and investment, online payments and money transfer and big data-driven market research (Bakhshi et al., 2012). London-based firms account for 32 places in one recent Fintech Top 50 survey; one estimate suggests the 'space' will be worth £1bn globally by 2016.¹¹ The City of London – a huge customer market literally next door – is clearly linked to this local growth.

Second, cluster boundaries are moving. Anecdotal evidence suggests technology firms are selecting into contiguous neighbourhoods in the North (such as Dalston and central

¹¹ <http://techcitynews.com/2014/02/06/peer-to-peer-lending-hots-up-as-lending-works-raises-3-5m> (accessed 18 February 2014).

Hackney)¹², South (the City) and West (Camden and King's Cross), as well as the large Level39 accelerator space in Canary Wharf (founded by a former head of TCIO).¹³ In part these reflect a blurring of Silicon Roundabout and other, existing digital economy hotspots (see Figure 1). A lack of large floorplate spaces in Shoreditch may be shifting larger businesses into these nearby neighbourhoods. However, our research suggests that a combination of rising rents *and* growing firm counts are also driving these relocations – likely reflecting the Tech City initiative, as well as residential property pressures, especially the growth of high-end student accommodation in the capital.¹⁴ Shared workspace is emerging as a cost fix for SMEs, with new providers entering the market (Google Campus) and existing providers expanding (Tech Hub, the Trampery, Hoxton Mix, Central Working).

Inner East London will remain a fertile site for future research. The social impacts of Tech City are one critical set of issues. This analysis suggests a number of avenues: the demographics of tech entrepreneurs; workforce or supply chain linkages between local technology firms, existing businesses and the locally-based workforce; and gentrification of amenities from lower-income residents to higher-income commuters.

¹² The Trampery recently opened a major new space in London Fields, for example (http://www.thetrampery.com/#london_fields_hackney (accessed 30 September 2013)).

¹³ Level 39 is 'Europe's largest accelerator space for finance, retail and future cities technology companies.' (<http://www.level39.co>, accessed 24 June 2013.)

¹⁴ Average rent rises are in line with London as a whole, suggesting that costs alone are not the issue (<http://techcitynews.com/2013/05/20/office-rents-not-inflated-by-tech-city-hype/> (accessed 30 September 2013))

Tables and figures

Table 1. Employment growth in the digital economy, 1997-2010.

Year	Digital economy		ICT		Digital content	
	IEL	GL	IEL	GL	IEL	GL
1997	21,931	271,062	9,253	91,223	12,678	179,839
1998	23,488	286,027	8,725	96,224	14,763	189,803
1999	25,068	297,402	9,348	105,601	15,720	191,801
2000	20,728	265,751	5,153	77,742	15,575	188,009
2001	27,013	306,545	11,943	100,076	15,070	206,469
2002	27,183	322,108	11,278	112,456	15,905	209,652
2003	36,172	384,713	13,628	125,174	22,544	259,539
2004	43,867	406,271	19,450	128,033	24,417	278,238
2005	43,461	381,549	19,270	110,938	24,191	270,611
2006	44,110	381,662	20,245	113,642	23,865	268,020
2007	43,940	371,928	19,968	102,146	23,972	269,782
2008	47,583	385,554	22,035	107,511	25,548	278,043
2009	48,577	408,448	21,034	110,241	27,543	298,207
2010	48,586	392,334	20,379	102,625	28,207	289,709

Source: BSD.

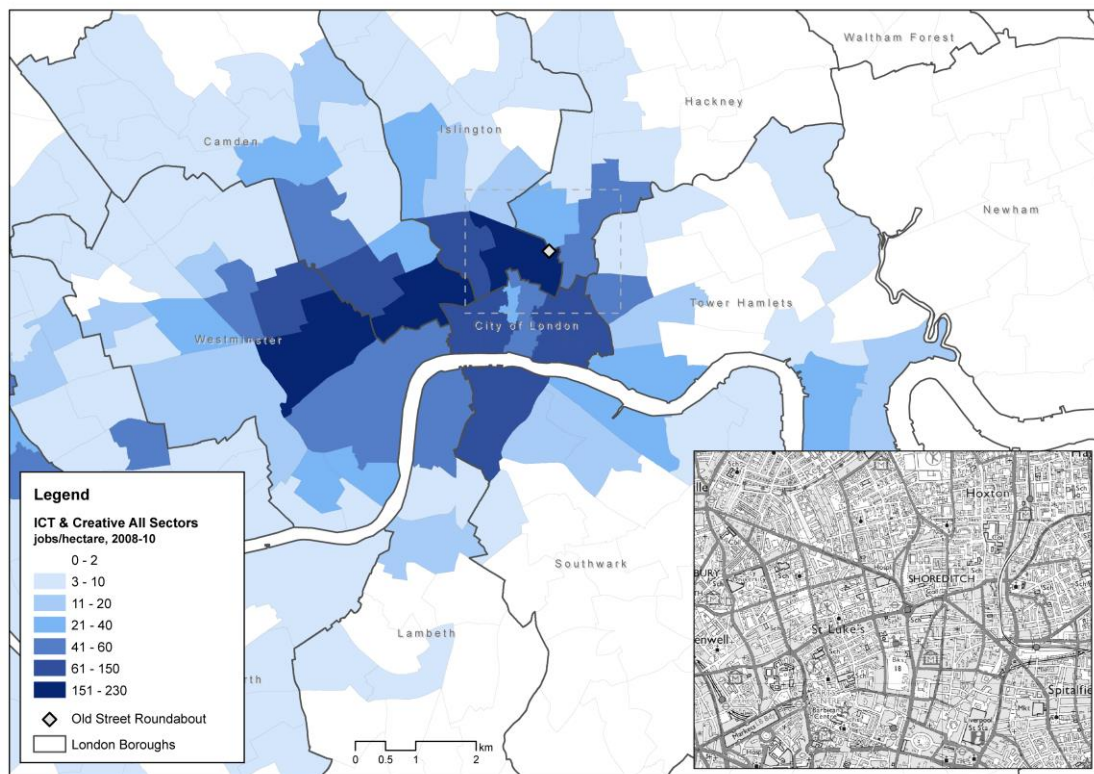
Note: IEL = Inner East London, GL = Greater London.

Table 2. Most-cited ‘challenges’ for inner East London firms.

Issue set	Number of firms citing as challenge
Business development	19
Access to finance	17
Skills gaps	14
Mentoring and management advice	13
Workspace access and cost	13
Connectivity	13

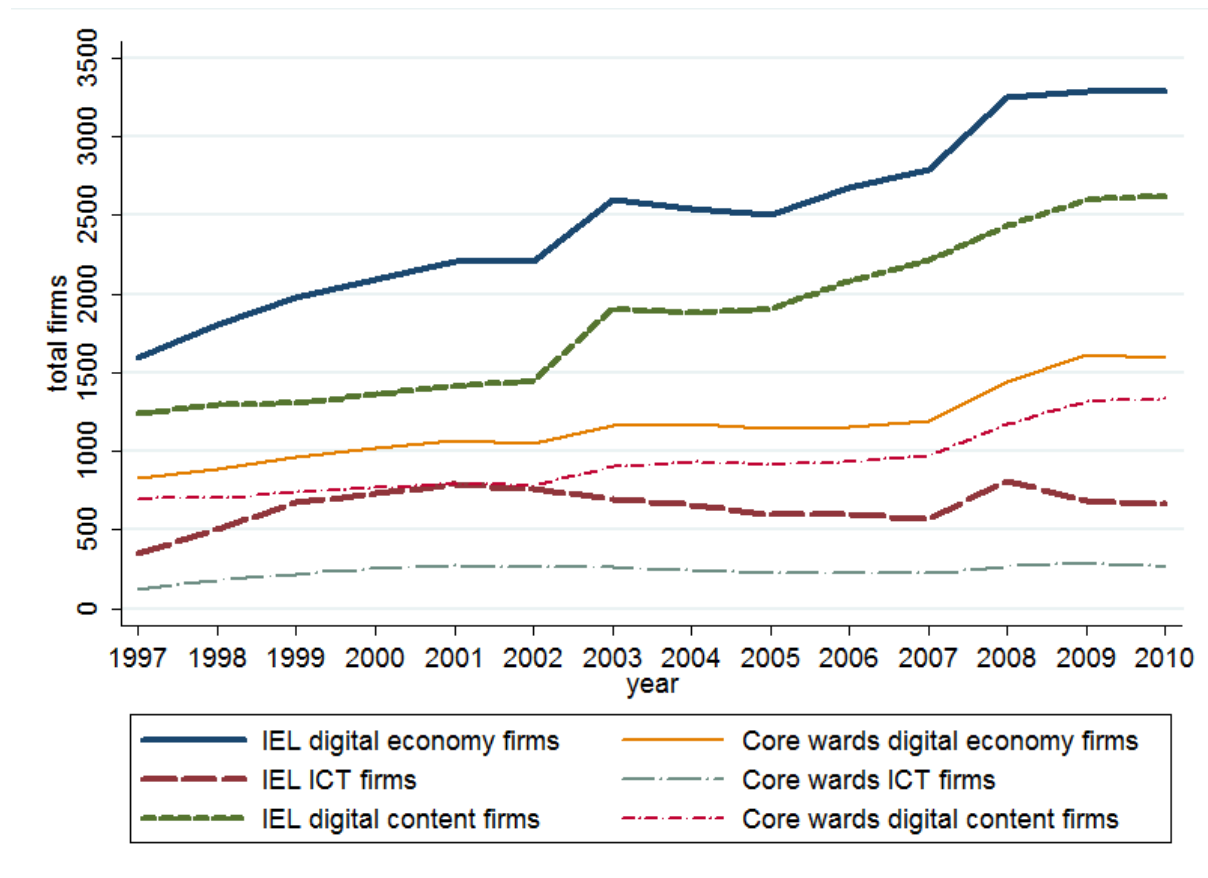
Source: authors' analysis.

Figure 1. Inner East London's digital economy: job density 2008-10.



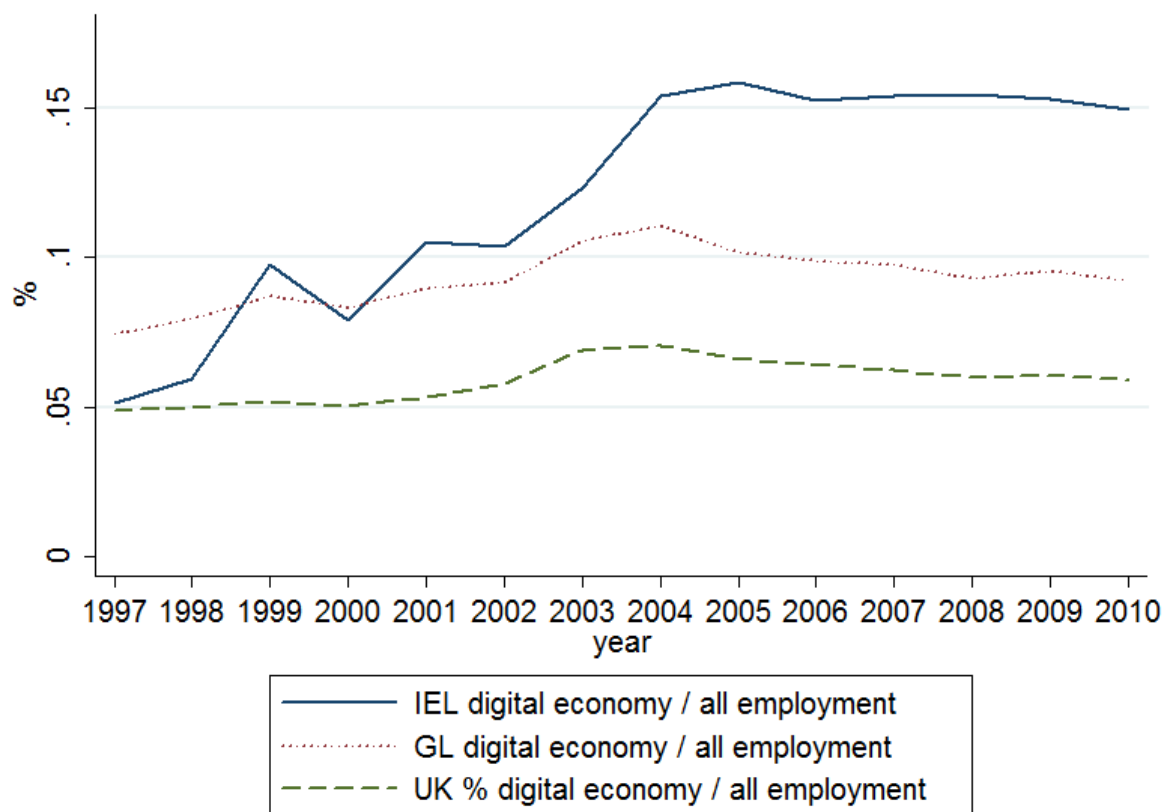
Source: BRES. Mapping by Duncan Smith, UCL/CASA.

Figure 2. Digital economy firm counts in Inner East London, 1997-2010.



Source: BSD.

Figure 3. Digital economy employment shares, 1997-2010.



Source: BSD.

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