Draft for Local Economy

Institutions, Place Leadership and Public Entrepreneurship: Reinterpreting the economic development of Nottingham

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Abstract

This paper develops a conceptual framework that draws on three discrete bodies of research: institutional perspectives on economic development, place leadership and public entrepreneurship. This framework is used to re-interpret the recent economic development of Nottingham (a second-tier regional city in the UK) with a particular focus on attempts to respond to the challenges of economic restructuring and de-industrialisation over the long term. Examples of public entrepreneurship are seen as forms of recursive agency through which institutions are established and reconstituted in ways that may facilitate adaptation and path creation in local economic development.

Keywords: Institutions, Place Leadership, Public Entrepreneurship, Path Creation, Nottingham.

Introduction

Accounts of regional and local economic development have placed increasing emphasis on the role of institutions in facilitating path creation, promoting resilience and enhancing competitiveness. Latterly there has been a growing focus on the importance of place leadership as a 'missing ingredient' in accounts of economic development (Rodriquez-Pose, 2013; Sotarauta, Beer and Gibney, 2017). This growing literature invites the fundamental question – how do individuals interact with institutions to effect change and promote adaptation? This paper argues that by integrating a third body of literature – that of public entrepreneurship – we can start to understand some of the processes by which individual actors (leaders) interact with institutions in order to facilitate positive local economic outcomes. In essence, leaders 'in' place are able to access and deploy the resources of institutions to promote initiatives conducive

to enhancing public good through the act of public entrepreneurship (Collinge and Gibney, 2010).

Context is also important – public and private institutions co-evolve over considerable timescales to produce an industrial milieu that may be more or less conducive to facilitating adaptation and new path creation in economic development. These complementary perspectives on local economic development are used to re-interpret the recent development of Nottingham through the prism of institutions, place leadership and public entrepreneurship. Nottingham is one of eight second tier cities in England (Champion et al., 2014). In recent years its leaders have sought to respond to the challenges of de-industrialisation and fashion a positive post-industrial future for the City.

Literature

Institutions in local economic development

Since the early 1990s there has been a burgeoning interest in the role of institutions in local and regional economic development. Initially, the focus of this research was on the development of 'New Industrial Districts' (Amin and Thrift, 1992; 1995; Raco, 1999). It has since been generalised to become a central tenet of evolutionary accounts of local economic development (e.g. Martin 2005; 2010). Collectively this body of work has identified:

"…the importance of the local milieu in the facilitation of new forms of economic development. The interrelations between firms as social actors, working through shared conventions, norms and understandings, and the ways in which social, political and economic institutions mediate these processes are highlighted." (Raco, 1999: 956)

A key concept to emerge from this body of work has been the idea of 'institutional thickness' (Amin and Thrift 1992; 1995, Amin, 1998) as a determinant or enabler of local economic development – particularly in the context of globalisation. Jessop (2001: 1221), contextualising this interest in institutionalist accounts of economic development within wider trends in a number of social scientific disciplines, has highlighted the sense in which this perspective tends to conflate institutions with organisations. He goes on to advocate a strategic-relational approach to the manner in which institutions should be analysed:

"*as complex emergent phenomena, whose reproduction is incomplete, provisional and unstable, and which coevolve with a range of other complex and emergent phenomena… They*

are path dependent, emergent phenomena, recursively reproduced through specific forms of action." (Jessop 2001: 1230)

Subsequent research following this 'institutional turn' has noted that ostensively similar institutions can operate differently in different contexts – hence it is not just the density of institutions that matters, but their quality or effectiveness in specific locales (Farole et al., 2011; Tomaney, 2014).

The fundamental recognition that institutions matter in local economic development is important, but also problematic from policy and research perspectives. From a research perspective, we are faced with the need to untangle the influence of institutions from the environments in which they occur. Rodriguez-Pose (2013) termed this a problem of endogeneity. At its heart is a question of causality: is it the institutions that beget economic development, or economic development that begets institutions? Or perhaps more likely is it that "*institutions and economic development co-evolve and are mutually reinforcing, with changes in capacity building and improvements in governance contributing to the development of economic activity and vice versa*" (Rodriguez-Pose, 2013: 1041)?

Furthermore, we must consider the fundamental nature of institutions themselves and whether it is formal, informal or a mixture of institutional forms/expressions that should constitute the focus of our attention? From a policy perspective, the recognition of institutions poses other challenges. The rise of institutional perspectives on development could be taken as strengthening the case for place–based over place–neutral economic development strategies (Barca, et al., 2013). Equally it could suggest the need to develop interventions that specifically target institutions for reform or development (Rodriguez-Pose, 2013). But what would this mean in practice?

In this context it is interesting to note that the recent UK Government Industrial Strategy Green Paper makes a number of very categorical statements about the importance of institutions:

"…we will work with local areas to identify and help develop local specialisms, putting in place the right institutions with the right powers to help support local areas of economic strength. This may involve creating new institutions or strengthening existing ones…" (HM Government, 2017: 121)

Who is to say what are the 'right institutions' and how will policy makers know when they have found them? Is it possible to purposively create or develop them – or must they necessarily emerge through the kinds of co-evolutionary processes described above?

As Rodriguez-Pose notes,

"…while institution building is an essential element of economic development and growth, the effectiveness of any type of institution-based regional development intervention is likely to be undermined by the problems of defining what are adequate and efficient institutions across different types of regions." (Rodriguez-Pose, 2013: 1042)

Place Leadership

If there is now widespread acknowledgement of the role of institutions in economic development, arguably there has been less attention paid to the role of individual actors operating in specific institutional contexts (Bristow and Healy, 2014). Latterly this deficit has been addressed by a growing focus on place leadership – a factor commonly identified as a missing ingredient in accounts of local and regional economic development (Rodriquez-Pose, 2013; Sotarauta, Beer and Gibney, 2017). Central to this growing literature is the distinction between leadership 'in' and leadership 'of' place (Collinge, Gibney and Mabey, 2010). In part this may be seen as an antidote to the tendency to focus on the 'hero' leader. It may also be taken as a necessary corrective to potentially deterministic institutional accounts of economic development that tend to emphasise phenomena such as path dependency and lock-in. Martin (2010) has argued for a more change orientated account of path creation in economic development. Following Sotarauta and Beer (2017), we contend that introducing a focus on place leadership can go some way towards reintroducing questions of agency into the analysis of local economic development.

A conceptual framework that encompasses both institutions and place leadership is better able to explore the relationship between structural determinants of economic development and the agency of actors whose room for manoeuvre is both constrained and enabled by a specific institutional context. In order to explore the interplay between structure and agency in these terms, we focus here on a particular type of agency: public entrepreneurship.

Public Entrepreneurship

The third substantive literature on which we draw for the conceptual foundations of our approach is the growing body of work that has coalesced around the concept of public entrepreneurship. Liddle's (2016) edited collection presents a useful overview of the state of the genre. A number of contributors to this collection locate their discussion firmly in the context of the economic and social challenges faced by communities in the wake of The Great Recession and associated austerity measures. This paper adopts a longer timeframe, but is still concerned with (public) entrepreneurial responses to long term economic and societal challenges, in this case associated with structural change and deindustrialisation.

Public entrepreneurship has been defined as:

"a process of creating value for citizens by bringing together unique combinations of public/private resources to exploit social opportunities". (Morris and Jones, 1999).

Our focus is more economic. Nevertheless the novel combination and recombination of resources, public and private to facilitate development and take advantage of opportunities from wherever they arise would seem to be at the heart of it. As such, research on public entrepreneurship resonates strongly with the economic development literature associated with adaptive capability and path creation (see for example Martin, 2005; 2010).

Public entrepreneurship can be viewed as one of the ways in which leaders 'in' place can draw on and deploy institutional resources (public and private) in order to effect change in pursuit of public benefit – however that benefit may be defined.

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The focus on public entrepreneurship also points to the significant role of the state in facilitating or enabling economic development. In different ways Cooke and Morgan (1998) and Mazzucato (2013) have highlighted the ways in which the state can act as 'animateur' – providing a spark or stimulus for innovation and path creation in economic development. The Nottingham case is interesting in that it clearly demonstrates that this role is not limited to the state. Private actors too may fulfil this function. The state in these terms is seen as having a capacity to influence the conditions under which other parties interact (Cooke and Morgan, 1998: 23). This perspective is elaborated further by Klein et al. (2014). Providing a more

comprehensive typology of public entrepreneurship they identify a number of processes at work:

1. Establishing the 'rules of the game' or the 'institutional environment for private action'.

2. The creation of new public organisations.

3. The manner in which public resources are managed and deployed.

4. Spill-overs from private actions to the public domain.

By considering examples of public entrepreneurship in Nottingham, we explore the ways in which a number of actors have, over a considerable timespan, taken advantage of opportunities afforded by the specific institutional and economic environment within which they worked – effecting change and influencing the development trajectory of the city. Latterly the focus of these efforts was as part of purposive efforts to shift the city towards a knowledge economy. We take a little inspiration from Jessop (2001: 1230) in viewing public entrepreneurship as a form of recursive agency through which institutions can be both reproduced and reconfigured over time.

Method and approach

Having established our conceptual framework in the tripartite combination of institutions, place leadership and public entrepreneurship, the paper proceeds to reinterpret the recent economic development of Nottingham from this perspective. We identify notable institutional developments, policy entrepreneurs and instances of public entrepreneurship that can be said, with the considerable benefit of hindsight, to have influenced the development trajectory of the city as its leaders struggled with the challenges of de-industrialisation. Evidence is drawn from a number of previous studies and associated fieldwork exploring aspects of Nottingham's economic development (e.g. Smith and Ehret, 2013; Rossiter, 2016; Totterdill 2000; McDonald-Junor 2015), historical (Wells, 1966; EMEPC, 1966). Documentary sources relating to the economy and development of the city and its institutions are also utilised (EMDA, 2006; Nottingham City Council, 2012), as are insights drawn from the authors' direct experience as participants in the institutions and (more recent) developments under review. Both authors have worked in and with educational, economic development and local

government institutions that have played significant roles in the recent evolution of Nottingham's economy[1].

In the light of the authors' 'positionality', we claim no particular objectivity – preferring to emphasise this account as the product of reinterpretation – from a specific conceptual and experiential position.

The birth and decline of large scale industry

The city of Nottingham has a long history as a centre of government and as a market town servicing a wide rural hinterland. However, it was with the establishment of the hosiery industry after 1730 that the town emerged as a major centre of manufacturing industry (Henstock, Dunster & Wallwork, 2006: 160):

"*In the course of the eighteenth and nineteenth centuries hosiery production, and its offshoot lace making, came to dominate the economy not only of Nottingham, but of its surrounding region*." (Chapman, 2006: 317)

Textiles continued to dominate the local economy but as the nineteenth century drew to a close and the twentieth century advanced, new industrial sectors began to emerge. Cycle manufacture, tobacco and pharmaceuticals, having taken root in the closing decades of the nineteenth century, gradually became more significant.

The interwar years were marked by adaptation in the city's textile industry as hosiery and knitwear (Chapman, 2002) largely replaced the once dominant lace industry. Meanwhile the new industries, exemplified by retail chemist Boots, cycle maker Raleigh and cigarette manufacturer Players (Wells, 1966), continued to expand and grow. The city's substantial stake in these new industries proved remarkably well adapted to the economic environment of the interwar years, which favoured industries producing branded consumer goods for the home market (Pollard,1992). The result was a significant re-shaping and diversification of employment in the city (Wells, 1966). As the emerging 'big three' employers of the twentieth century expanded, they built major new factories in the city and took on more staff, and the sectoral composition of the local economy changed. The 'big three' became mainstays of the local economy, so much so that,

[1] Both of the authors have worked at Nottingham Trent University and one was employed by the East Midlands Development Agency for a decade until its closure.

"*The enterprise of all three firms was to sustain the local economy through the difficult years of decline in traditional industries*". (Chapman, 2006: 480).

By the middle of the twentieth century, structural change within the local economy had gathered pace. Economists (Wells, 1966: 405) were now able to describe Nottingham as an outstanding example of an economy with 'a well-balanced employment structure'. The early postwar years were golden ones for Raleigh as production doubled in the 1950s to one million cycles a year (Chapman, 2006). Similarly Players' cigarette sales overtook those of rival brand Wills in the late 1950s. At Boots profits from manufacturing, once the Cinderella of the business climbed to 40 per cent of turnover (Chapman, 2006).

By the 1960s Boots, Raleigh and Players each had nearly 10,000 employees. However the 1960s were to be the zenith for two of Nottingham's 'big three' employers. Nottingham was a city whose wealth had been built on the mass production of standardized goods where markets changed very little (Totterdill, 2000: xi), but during the course of the 1970s and 1980s these markets did begin to change. Increased car ownership combined with stiffer overseas competition saw Raleigh's output and employment steadily decline despite a merger with Tube Investments and attempts at diversification into mopeds and motor scooters both of which proved unsuccessful (Chapman, 2006). Likewise Players was subject to a similar pattern of declining employment during the course of the 1970s and 1980s. The main factor was increasing public recognition of the health risks associated with tobacco and cigarette smoking. During the 1980s five of Players' factories in the city closed and some 3,000 staff were made redundant (Chapman, 2006). By the turn of the millennium both Raleigh and Players had ceased major manufacturing operations in Nottingham.

As the Millennium approached, the city was on the way to becoming a more service orientated economy. This was exemplified by the rise of Experian. Originating in Nottingham, Experian provides a fascinating modern day example of the same process of adaptation that occurred in the late nineteenth century. It began life in the early 1970s as the credit checking arm of furniture retailer Cavendish Woodhouse, which was part of Great Universal Stores (GUS). It was commercialised as Commercial Credit Nottingham (CCN) in 1980 (Nottingham Post, 2013) and through a combination of organic growth and acquisitions, it grew steadily, until it was floated as Experian plc in 2006 whereupon it became a FTSE 100 company. Though now one of Nottingham's largest employers, its workforce of more than 2,000 is much smaller than the big three in their heyday.

Consequently at the turn of the millennium there were many who saw the city as suffering the effects of de-industrialisation. In a report on Nottingham's economy published in 2000, the deputy leader of Nottingham City Council, Graham Chapman described how de-industrialisation had, 'helped create an extensive underclass, helped break-up communities.'(Chapman, 2000: 21). This he suggested had in turn helped to push up crime figures in the city.

Sowing the seeds of the post-industrial economy: the growth of science-based institutions

A key factor in the move to a post-industrial economy in Nottingham, in particular one where science-based sectors like bioscience and healthcare are a feature, has been the emergence and subsequent development of a particular institutional milieu. This comprises what Cooke and Morgan (1998: 9) describe as an 'ensemble of organisations…which have a bearing on economic development'. This included institutions that provide a knowledge base especially ones with a strong scientific background like universities and research institutes as well as agencies involved in technology transfer and economic development. The growth of this milieu in Nottingham has over time generated a much increased institutional thickness (Amin and Thrift, 1995), which has been important not just for the knowledge it represents but its influence on the ways in which people and organisations interact.

Two examples are the City's two universities which emerged in the second half of the twentieth century. They co-evolved alongside additional layers of institutions in areas like health and economic development. Their growth and development led to a steady accumulation of institutional capacity. At the same time actors willing and able to make use of such institutions and their resources have appeared.

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Insert Figure 2

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Nottingham was comparatively late in acquiring its first university. Cities like Birmingham, Manchester, Leeds and Sheffield all acquired a university in the first decade of the twentieth century (Chapman, 1974: 182). In contrast it was the mid-point of the century before Nottingham gained an independent university. As early as the 1830s, local textile manufacturers led by William Felkin, a lace manufacturer and leading member of the Town Council (Church, 1966: 328), with strong support from the local press, began campaigning for

the establishment of a School of Design which would support the lace and hosiery sectors in the town (Church, 1966: 328). This materialized in 1843 with the opening of the Government School of Design, the product of private subscriptions and a government grant of £150 per annum (Church, 1966: 76). At the time it was the first provincial art school to be established outside London. Meanwhile in the 1850s a proposal for the creation of 'a collegiate institution' in Nottingham was put forward. This failed to gain sufficient support and as a result it was to be another 20 years before the idea was revived. This time the stimulus was the provision of extension classes in the town by the University of Cambridge (Wood, 1953: 14). The success of these courses prompted the Town Council, with the help of an anonymous donation of £10,000, to agree in 1875 to the erection of a building to house the courses along with a library and a museum. The University College opened in1881. At the time it was one of only six provincial centres in Britain offering university level education. However at a time when other provincial universities received significant financial support from local industrial benefactors (Tolley, 2006: 561), Nottingham was unusual in that the University College was 'founded and almost wholly funded by the local ratepayers' (Whyte, 2015: 137).

The absence of an endowment fund meant that the college, unlike its rivals in Birmingham, Manchester, Liverpool, Sheffield and Leeds, failed to obtain the coveted charter of an independent university (Chapman, 1974: 182). As Chapman (1974: 182) notes:

'In Nottingham the small family firms that composed the town's unstable fashion industries were forever postponing for a better day the moment they might reach into their pockets'.

At the end of World War One a fresh campaign was mounted, this time with financial backing from Jesse Boot, the founder of the retail chemists, Boots. In 1920, having sold his business to the United Drug Company of the United States, Jesse Boot gave £20,000 to establish a chair of Chemistry (Beckett, 2016: 51). The following year, he gave the Highfields Estate to the west of the city, as a site for an expansive new campus and by the time building work was completed in 1928, he had given almost half a million pounds in the form of land, buildings, endowments and money (Beckett, 2016: 62).

Nottingham eventually gained a royal charter and thence its independence in 1948. Achieving university status was to prove timely. The Barlow Report of 1946 had recommended an immediate doubling of the number of students studying science in Britain. This stemmed from an ambitious vision of the role of universities after World War Two, in which scientific training was seen as vital to Britain's future (Campbell, 2011). Hence when in the early 1950s, the

University Grants Committee encouraged universities with existing technology-based departments to apply for special funding to assist in their growth and development. Nottingham University's vice chancellor Bertrand Hallward came forward with ambitious plans for a major expansion of Pure and Applied Science. The plans centred on the creation of a 'Science City' (Campbell, 2012), which it was envisaged would see overall student numbers increase by 50 per cent to more than 3,000. Basil Spence, the architect of the new Coventry Cathedral (Nottingham Post, 2010) was approached to develop plans for this flagship project (Walker, 2008). With a budget of £3million, the development which was completed in 1966, saw overall student numbers in the university, boosted by a big growth in science, rise to 4,000. This growth in science was complemented by the addition in 1970 of Medicine and the construction of a new medical school, located in a new purpose-built teaching hospital, built on a site adjoining the new Science City campus.

Student numbers continued to grow reaching 10,000 by the late 1980s. The appointment of Colin Campbell as vice chancellor in 1988 marked a new phase of development. Campbell soon demonstrated a willingness to engage with other institutional actors in furthering the development of the university. One of his first moves was to oversee the development of the University's science park, in a joint venture with Nottingham City Council. Other agencies became involved in the later stages of development, notably Blueprint a public-private partnership and the East Midlands Development Agency (EMDA). Another major project instituted during the 1990s by Campbell was the new Jubilee campus. Forming part of a major regeneration project in the city, the new campus involved the re-development of a brownfield site formerly occupied by the Raleigh cycle factories. Then in 2008 the Innovation Park opened on the Jubilee campus (Beckett, 2016: 433), an ambitious project designed to attract businesses keen to work with the university.

The granting of a charter to create Nottingham University coincided with the establishment of Nottingham and District Technical College which inherited the city centre site previously occupied by the University College along with its part time and evening courses. The divergence of what became Nottingham's two universities at this point represented an interesting example of institutional branching. During the 1950s the technical college increasingly taught higher level courses including London University external degrees and as a result was one of 16 colleges designated regional colleges of technology in 1956 (Peters, 1967: 68). With the designation of 30 polytechnics in the late 1960s (Robinson, 1968), the college, having merged with the College of Art, became Trent Polytechnic in 1970. Throughout

the 1980s the polytechnic continued to expand and in 1989 along with similar institutions, it gained full independence from local authority control becoming Nottingham Trent University in 1992. Hence by the 1990s Nottingham had two large universities and within ten years student numbers had risen further in both institutions giving the city today a student population of around 60,000.

Institutional developments in the field of science and technology in Nottingham have by no means been confined to higher education institutions. Nottingham has also benefited from developments in health-related institutions. Chief among these has been the development of the Queens Medical Centre (QMC). Opened in 1977, the QMC was the first purpose-built teaching hospital to be constructed in the UK, and is currently one of the largest teaching hospital in England (Mathieson, 2011). Serving as the main acute hospital for the East Midlands region, QMC has grown to the point where it now employs nearly 12,000 staff. As such it constitutes a significant addition to the City's science base. The advent of the QMC helped the City to generate 'critical mass' in health related biosciences by providing a real boost to the scientific labour market in Nottingham and stimulating demand for health related bioscience services and expertise.

Alongside health-related institutions Nottingham has also gained an important scientific research institution in the last thirty years. This is the headquarters of the British Geological Survey (BGS) based at Keyworth, some 6 miles south east of Nottingham. The BGS is the UK's principal research institute responsible for geoscientific data relating to Great Britain and the surrounding continental shelf. Originally based in London the move of the BGS from the capital was first muted in the 1960s, as part of efforts to disperse government staff away from the South East (Allen, 2003). When the closure of Mary Ward College of Education, a teacher training college located at Keyworth was announced in 1975, the site and buildings were acquired as a new location for the headquarters of BGS. Several hundred staff were then gradually transferred from offices in London and Leeds (Allen, 2003), prior to the BGS headquarters being formally opened in 1985. Today it employs some 500 highly qualified scientifically trained staff providing a wide range of geological services for government, local authorities and industrial customers.

Two further institutional layers within which we can observe the development of important capabilities and resources in Nottingham are local government and economic development (see

Figure 2). In local government we note the evolution and development what is now Nottingham City Council. From a town council in the 19th Century, the acquisition of the City Charter in 1897, through local government reorganisation in 1973 and reconstitution as a non-metropolitan district council, the City Council finally acquired unitary status in 1998. A significant milestone in the development of the City Council was establishment of its first dedicated economic development team in the early 1980s (Roberts et al., 1990) – in part a response to growing concern about the fortunes of the City's textile and clothing sector.

In the economic development sphere, we note a less linear trajectory of development – but a clear acceleration in the accretion of organisational capabilities and resources from the early 1990s. At a regional level an East Midlands Economic Planning Council (EMEPC) had been established in the mid-1960s under the auspices of the short-lived Department for Economic Affairs[2]. But it was really in the 1990s that this cumulative accretion of economic development resources and capabilities gathered pace. The influence of Michael Heseltine[3] was not insignificant through the establishment of the Training and Enterprise Councils (TECs) and the regional Government Offices. The Government Office for the East Midlands (GOEM) was based in Nottingham, as was the South Nottinghamshire TEC. Although primarily concerned with the administration of publicly funded work-based training, the TECs had an economic development remit that encompassed a requirement to produce an annual economic and labour market assessment[4] – a significant milestone in the development of local research capabilities relevant to understanding the local economy. Trent Polytechnic (and later as NTU) also contributed to the development of this capability through a succession of research units with a focus on the local economy – examples including the Work Institute, the Nottingham Observatory, Nottingham Economics and latterly the Economic Strategy Research Bureau. The willingness of bodies like the City Council and the Training and Enterprise Council to work with these units drawing on them for economic research expertise (Rossiter, 2016; Trent Polytechnic, 1983) was further evidence of institutional thickening.

[2] The Department for Economic Affairs (DEA) was established under the Government of Harold Wilson in 1964. It ceased operation in 1969. Its prime function had been preparation of a long term national economic plan.
[3] Then Secretary of State for Trade and Industry, or President of the Board of Trade (1992-95). Later Deputy Prime Minister under Prime Minister John Major (1995-97).
[4] It is noteworthy that the subsequent Learning and Skills Councils which replaced the TECs from 2001 had no similar economic development remit.

Establishment of the English Regional Development Agencies in 1998/9 further added to this 'institutional thickening'. The East Midlands Development Agency too was based in Nottingham and was closely involved in the establishment and funding, with Nottingham City Council, of the Greater Nottingham Partnership (GNP). In the parlance of the Agency, the GNP was termed a 'sub-regional strategic partnership' and had a remit to promote local economic development and regeneration in Nottingham and the surrounding area. The GNP had a significant role in delivering a range of EMDA funded programmes in partnership with the City Council.

The emerging bioscience cluster in Nottingham

While Raleigh and Players went into decline in the 1970s and 1980s, Boots continued to prosper. Through acquisitions, including rival chemist Timothy Whites with its 600 branches acquired in 1989, Boots' retail chemist business continued to expand. It was a similar pattern for Boots' pharmaceutical business which saw a number of important acquisitions in the 1970s including Crookes Laboratories and Rucker Pharmacol, and in the 1980s the Flint division of Baxter Tavernol (Chapman, 2006). Flint was a US company that owned *synthroid*, a big selling treatment for thyroid conditions. Thus by the mid-1980s Boots was not only the UK's largest retail chemist, it was also the fifth largest pharmaceutical company in the UK (see table 1). However it lacked the international marketing capability of rivals like Glaxo, Wellcome and Beecham.

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Insert Table 1

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In the late 1980s under a new chief executive James Blyth, Boots attempted to diversify into other areas of retailing, in particular larger stores in out-of-town locations, such as Children's World, the Halfords automotive parts chain, and the Do-It-All home improvement chain. The acquisitions proved disastrous as they were followed by a major recession in the UK in the early 1990s. By now Boots Pharmaceuticals was also facing difficulties. These reflected its relatively small size internationally (see table 1) and problems surrounding the development of new drugs. In 1993, having spent 14 years and £150 million on research and development (Hoskings, 1993), Boots withdrew its heart drug *manoplax*, when new research showed that while it was effective in relieving the symptoms of congestive heart failure (CHF) it could in

certain circumstances shorten life slightly. (Hoskings, 1993). Hence the impact when it finally flopped was all the greater.

Faced with this setback, and with other parts of Boots such as its DIY chain Do-It-All in trouble and the new Children's World chain taking much longer than expected to come good, this placed the future of Boots Pharmaceutical division in doubt. There were those who argued that Boots, ranked in 50th place in the world by size, was simply too small. Hence in 1994 Boots board took the decision to divest itself of the prescription only drug business and early in 1995 the business was sold to the German chemical conglomerate BASF for £850 million (Green, 1994). Although Boots retained the over-the-counter pharmaceutical business along with contract manufacturing, the deal ended the company's 80 years in the prescription drugs sector.

Within four years, BASF was itself conducting a strategic review of its entire pharmaceutical operation worldwide. There were those within the company who had always found it difficult to see BASF as anything other than a chemical company. In any event the 1990s were a tumultuous decade for the worldwide pharmaceutical industry which saw significant re-structuring (Owen, 1999). This was not helped by regulatory concerns limiting the use of *reductil* the anti-obesity drug developed by Boots. Thus in March 2001 BASF sold its pharmaceutical business (trading as Knoll Pharmaceuticals) to the American pharmaceutical company Abbott Laboratories of Illinois for $6.9 billion (Abelhauser et al., 2004: 609). However there was a problem as Abbott, though keen to acquire the Nottingham site's IPR which included the anti-obesity drug *reductil*, did not want either the site itself or the staff. As a result BASF was forced to make 450 highly qualified scientific staff in Nottingham redundant and try to find a buyer for the site itself. The loss of so many highly skilled science jobs was a major blow to the local economy. The redundancies came at a point when the closure of the last Raleigh manufacturing plant in Nottingham had recently been announced and not long after another major manufacturing plant in the city, Royal Ordnance, owned by British Aerospace, had also closed.

The disposal of the former Boots research laboratories on Pennyfoot Street in Nottingham was to prove problematic. Although the site was quickly put up for sale, there was little interest from buyers. The laboratories were modern and purpose built so were not easily converted to alternative uses. In addition the site itself had limited scope for development, because much of the land was contaminated through prolonged industrial use. When it became clear that there

was little prospect of selling the facility and that demolition and clearance would be expensive, BASF began to cast around for alternative courses of action. A key actor at this critical point who was to take on the role of public entrepreneur, was BASF's chief executive in the UK, Barry Stickings. He came up with the novel idea of giving the research laboratories away. Potential recipients capable of making use of the facility were the higher education institutions that now formed an important part the city's knowledge-base.

Surprisingly BASF chose to gift the laboratories not to the University of Nottingham, the more research intensive of the city's two universities and the one that historically had stronger links to Boots, but to the city's former polytechnic, Nottingham Trent University. The choice surprised many. However the site was much nearer to Nottingham Trent University's city centre campus and many of its technical staff had been trained there over the years. Interviews with participants in this process suggest that it was precisely this difference between the nature of the two universities that led key decision makers within BASF to conclude that a gift to NTU would have the 'greatest impact'[5].

Whatever the motives, in August 2001 it was formally announced that BASF had gifted the facility, which comprised three buildings valued at some £4 million, comprising more than 100,000 square feet (THES, 2001) of laboratory space, to Nottingham Trent University. Spread across three buildings, the facility which was located on Pennyfoot Street in Nottingham, comprised world class laboratories and state-of-the-art equipment. The buildings comprised a manufacturing facility for early stage clinical trials, together with a total of 16 medical chemistry laboratories. The facility would have cost close to £50 million to build and equip at current prices (Hansard, 2008). The move on BASF's part was unprecedented. At the time it was the largest corporate donation ever to have been made to a post-1992 university (Hansard, 2008).

Having acquired the former BASF laboratories, Nottingham Trent University had to consider what to do with the Pennyfoot Street laboratories. Initially the university considered using the facility as teaching accommodation, but it quickly became apparent that this wasn't practical. Instead the possibility of using the facility as an incubator for bioscience start-up firms was put forward. Barry Stickings at BASF was a strong supporter of this idea very possibly because a

[5] Interview with senior research scientist employed first by Boots and then BASF on the Pennyfoot Street site.

number of potential tenants, including RenaSci Ltd, a company formed by ex-BASF staff, had enquired about the possibility of renting laboratory space. However conversion of the research laboratories into incubator units represented a substantial capital investment. Fortunately BASF agreed to underwrite the running costs of the facility until Nottingham Trent University had had an opportunity to, '*develop a robust business plan and secure the necessary funding*' (Hansard, 2008). It was at this point that a new institutional player came into the picture in the form of the newly established regional development agency, EMDA.

By now EMDA had the capability to assess possible uses for the redundant laboratories. It was also responding to a clear national level policy drive from the Department for Trade & Industry to develop knowledge–based industrial clusters (Swords, 2013). It was also sufficiently well established to be able to ensure that Nottingham's two universities, who often found themselves in competition both for students and academic staff, worked together for common goals. Thus EMDA was able to broker a deal whereby both of the universities became involved in operating the incubator through a joint venture in which they were partners along with the development agency. As consultants were later to report, the partners represented,

'a unique example of strong collaboration between a Regional Development Agency (East Midlands Development Agency), two universities (the Nottingham Trent University and the University of Nottingham) and a major science–based company (BASF plc).' (Hansard, 2008).

Under EMDA's guidance it was agreed that the Pennyfoot Street laboratories should become an 'incubator' specializing in embryonic bioscience companies. They would be housed in small laboratory based units sharing common facilities and services. Some £9 million was spent over the next ten years through funding provided by EMDA and latterly Nottingham City Council, to extensively refurbish and modernize the laboratories. The facility was re-named 'BioCity Nottingham' to reflect its city centre location. The first phase of the development was opened by the science minister, Lord Sainsbury in September 2003 (Connon, 2003). Phases two and three of the incubator were launched in 2006 and 2009 bringing the total floor space available within the incubator to more than 120,000 square feet. Finally in 2014 Jon Collins, the leader of Nottingham City Council announced that it, with support from the D2N2 Local Enterprise Partnership, had agreed to fund a fourth phase in the development of the BioCity incubator costing some £30million. This was the new five storey Discovery Building intended to provide

'grow on' space for expanding bioscience companies such as Sygnature Discovery. When completed in mid-2017, it was expected to bring the total number of staff employed within the BioCity life science complex in the centre of Nottingham to almost 1,000 (Toulson, 2014).

A related development was the setting up of MediCity in 2013. This is another incubator this time housed in the former D6 building located on Boots manufacturing site in Beeston to the west of Nottingham. The MediCity incubator forms part of the Nottingham Enterprise Zone championed by Boots CEO, Ken Murphy, and established by the Cameron government in March 2011. The incubator specialises in health and well-being related start-ups and is managed by BioCity.

A new development path emerges in Nottingham

By the second decade of the twentieth century it was evident that a new post-industrial development path, based on bioscience and health, had begun to emerge in Nottingham. The most obvious symbol of this new development path is the bioscience cluster centred on the BioCity incubator which now comprises 75+ bioscience related companies currently employing some 700 staff between them.

Another symbol was the designation of Nottingham by the UK government in May 2005, as one of six 'Science Cities' (Charles and Wray, 2015). The designation of these cities was based on the presence of 'high performing universities and research establishments' that can contribute to attracting 'a critical mass of knowledge-based businesses' (HM Treasury, 2004). Nottingham's designation reflected the city's scientific achievements (i.e. the discovery of the painkiller *ibuprofen* at Boots in the 1960s), the quantity and quality of its scientific institutions and the strength of science-based sectors within the local economy. It also reflected increasing recognition of the BioCity incubator's success as one of the largest bioscience incubators in the UK.

By the middle of the first decade of the new millennium there were clear signs that the post-industrial knowledge based economy had been institutionalised as a central part of the development of the city. Strategic plans for the development of Nottingham's economy began to feature bioscience as a key part of the city's future development. The East Midland Development Agency's (EMDA) selection in its Regional Economic Strategy, entitled 'A

flourishing region' (EMDA, 2006), for example highlighted bioscience/health as one of four priority sectors predicted to, 'make the greatest contribution to the East Midlands economy over the lifetime of the strategy'. Similarly when in 2012 Nottingham City Council published its contribution to local economic development in the form of the *Nottingham Growth Plan* (Nottingham City Council, 2012), this explicitly recognized recent changes in the city's economy by specifically identifying bioscience as a 'growth sector' in which the city had a 'competitive advantage' and including it as one of just three sectors prioritized in terms of their potential contribution to the development and growth of the city's economy.

Discussion

Nottingham's transition from the industrial city depicted by writers like Graham Greene (1971) and Alan Sillitoe (1958) is comparatively recent. While the project to fashion a positive post-industrial future remains ongoing, a services oriented economy with particular strengths linked to knowledge and science related expertise has begun to develop. Occurring in the space of little more than 20 years, it is tempting to see this transition as the product of global factors. It was global competition that largely brought about the demise of Raleigh and the city's textile industry. Similarly the global re-structuring of the pharmaceutical industry brought about the exit of first Boots and then BASF from pharmaceuticals, leading ultimately to the closure of the Pennyfoot Street laboratories. The demise of the cigarette manufacturer Players too was the result of increasing awareness globally of the dangers to health of smoking, in which national policies undoubtedly played a part. On a more positive note, the rise of bioscience and the opportunities this presented for the commercialisation of scientific breakthroughs developed in universities was a global phenomenon, as was the growth of open innovation and the opportunities this presented for small bioscience start-up companies.

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Insert Table 2

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While these factors may have provided the context for the changes that took place in Nottingham, it is clear that a key factor in the creation of a new development path was the role of a number of actors who, drawing on and working through a variety of local institutions, took the role of public entrepreneur. Among the latest in a long line of public entrepreneurs (see table 2) exhibiting place leadership in Nottingham was the UK CEO of BASF, Barry Stickings. He was instrumental in the decision to gift the former Boots laboratories at Pennyfoot Street to

a local university. At the time this was a novel choice for a commercial organisation operating in a highly competitive environment. Stickings also appears to have been a key actor in the bold decision to convert the laboratories into a bioscience incubator. He displayed precisely the capabilities Klein et al (2010) identify as being associated with public entrepreneurship, namely the ability to change the rules of the game, to create new public organisations, to creatively manage public resources and to induce spillovers from the private sector into the public domain.

However as Stimson et al. (2009) stress, the development of a city's local economy is typically the product of public entrepreneurs interacting with an appropriate institutional framework. Significantly, the institutional framework that existed in Nottingham by the turn of the millennium differed markedly from that which prevailed earlier in the 20th century. While the latter was primarily industrial, its 21st century equivalent was very much a knowledge based institutional framework. Unlike some other cities, for instance Tampere in Finland (Kostiainen and Sotarauta, 2003), where civic leaders actively sought to attract universities from elsewhere, in Nottingham the knowledge based institutions, embracing universities, hospitals and research institutes, were ones that had gradually co-evolved with the economic development of the city. Their development was the product of a recursive process over the course of more than a century and a half that saw actors like William Felkin, Jesse Boot and Barry Stickings, step forward to take up the mantel of public entrepreneur (see table 2), thereby exercising leadership 'in' place (Collinge and Gibney, 2010).

Conclusions

By the millennium whilst the challenges facing Nottingham were great, its local milieu had evolved sufficiently to facilitate the creation of a new development path, based this time on bioscience and healthcare. The most obvious signs of this were the city's two universities, but as the study shows it was actually multi-layered. Not only were there other institutions contributing to the knowledge base, new institutions had emerged that could play a vital role in economic development in the city.

Nor was it simply a matter of accumulating appropriate organisations. An important feature of the new institutional milieu that had emerged was the changes that had taken place in terms of what Cooke and Morgan (1998: 9) describe as the 'soft' side of institutions, namely the norms and conventions that influenced the way in which people and organisations interact. At

all levels interaction between institutions engaged in economic development was very much more collaborative. At the same time there were a number of leaders in place who were able to harness these institutions, in order to access both private and public resources and apply them through acts of public entrepreneurship to affect change.

Significantly a number of these actors, were public entrepreneurs whose careers were forged in the private rather than the public sector. Yet their contributions were at least in part directed at the public interest, specifically through the development of public organisations. It was through the cumulative accretion of institutions that capabilities were developed locally that could be deployed to support new path creation. A succession of public entrepreneurs were instrumental in the creation and development of key scientific, educational and private institutions in the City. Indeed we can identify a cumulative and recursive process at work: whereby public entrepreneurs were instrumental in creating public organisations that in turn developed resources and capabilities that later generations of public entrepreneurs were able to access and deploy in order to effect change and support path creation.

In contrast to cities like Sheffield (Catney & Henneberry, 2016), Birmingham (Barber and Easterway, 2011) and Leicester (Quinn, 2013) in the UK and Tampere in Finland (Kostiainen, and Sotarauta 2003), the pattern of public entrepreneurship evident in Nottingham has seen prominent roles fulfilled by actors from the private sector. This is not to dismiss the important role played by actors in local government and development agencies, it is more to suggest that Nottingham has seen the emergence of a 'mixed economy' of public entrepreneurship.

These actors have operated in the context of multilevel governance to develop and position local initiatives that have chimed sufficiently with and taken advantage of opportunities afforded by national Government policy to access resources. We see this in Felkin's ability to secure funding from national Government for the College of Design in the nineteenth century, the University of Nottingham's expansion following the Barlow Report, the establishment of the QMC in the 1970s and latterly the case of BioCity, a local implementation of national cluster policy (Swords, 2013), but also the product of a very specific local milieu.

7888 words (excluding abstract)

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Figure 1. Conceptual framework

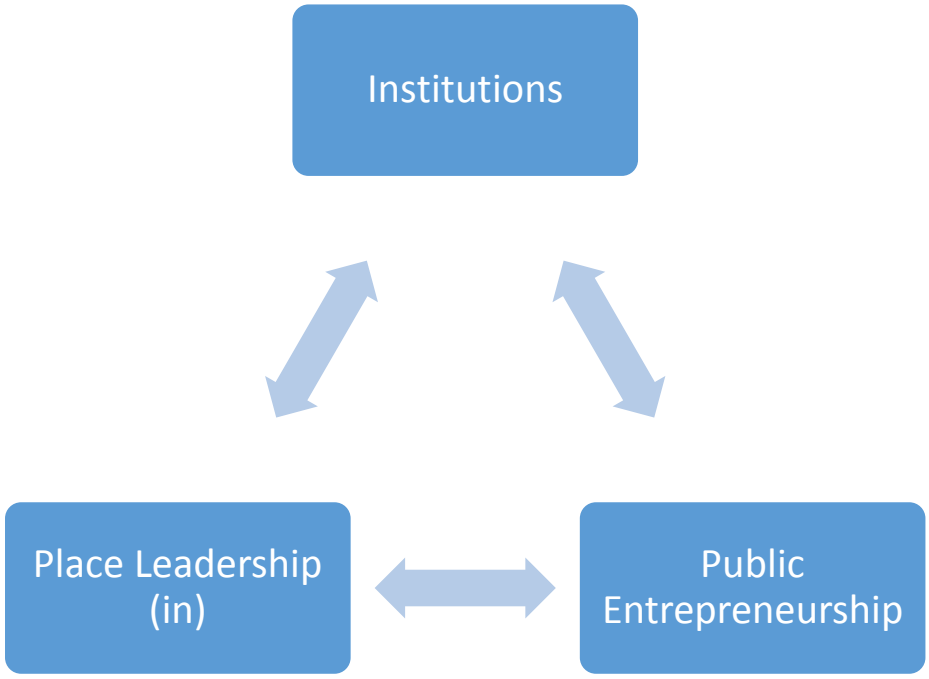

Figure 2. Institutional 'layering' and co-evolution in Nottingham

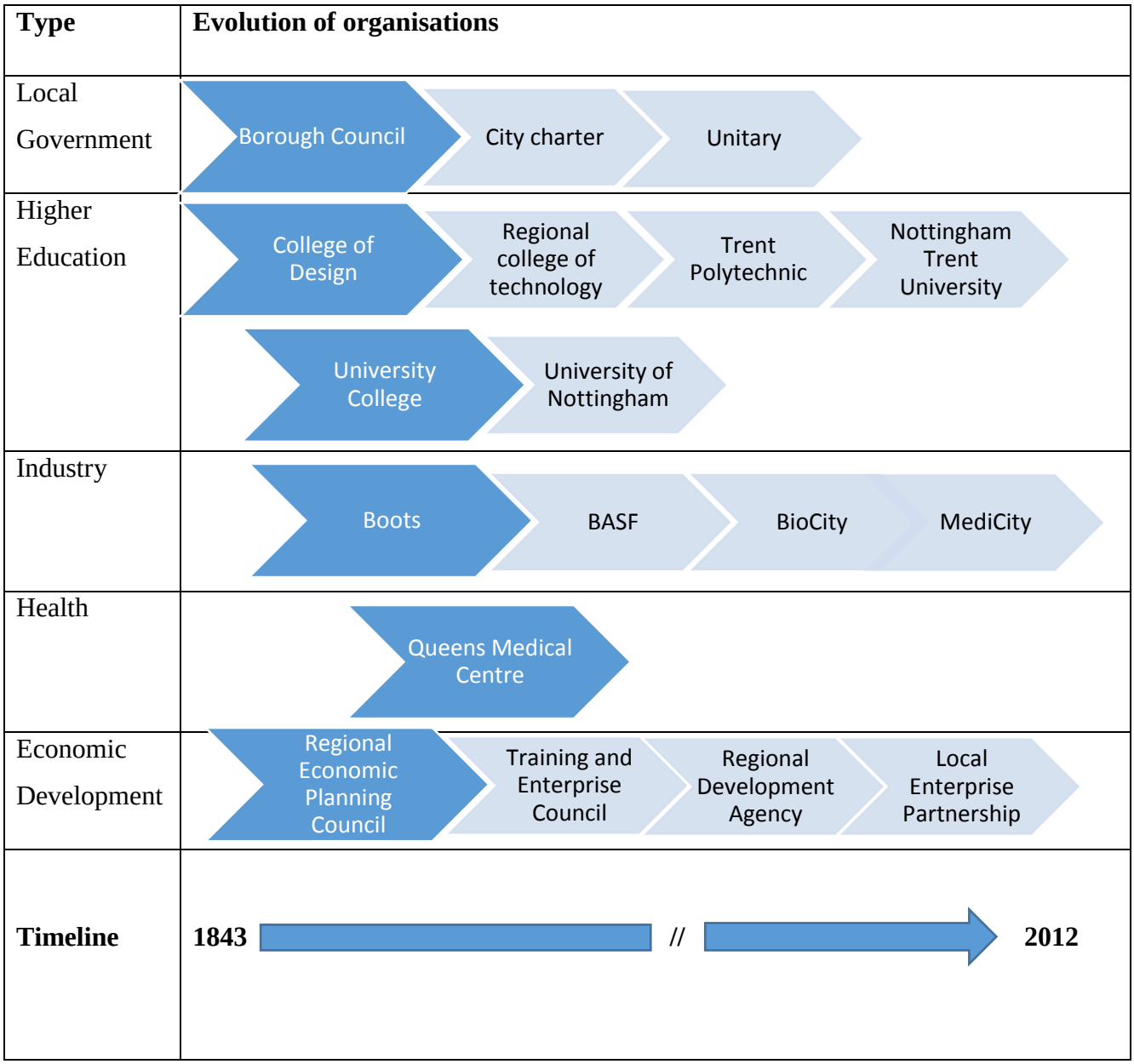

Table 1

UK-owned Pharmaceutical companies, 1982

UK Ranking	*Company*	*Pharmaceutical sales (£m)*	*Pharmaceuticals % Total sales*	*World ranking*
1.	Glaxo	990.0	88.0%	18th
2.	ICI	839.0	7.0%	23rd
3.	Wellcome	837.0	80.0%	24th
4.	Beacham	782.0	31.3%	25th
5.	Boots	399.0	16.0%	42nd
6.	Fisons	206.0	36.0%	66th

Source: Owen (1999)

Table 2
Nottingham's Public Entrepreneurs

Entrepreneur	**Role/ Occupation**	**Organisation**	**Sector**	**Institutional development**
William Felkin	Manufacturer	Lace Manufacturer	Private	College of Art & Design
Jesse Boot	Founder	Boots	Private	University College
Bertrand Hallward	Vice Chancellor	Nottingham University	Public	Science City (Nottingham University)
Barry Stickings	CEO	BASF UK	Private	BioCity Nottingham
Colin Campbell	Vice Chancellor	Nottingham University	Public	Science Park, Jubilee Campus
Ken Murphy	CEO	Alliance Boots	Private	MediCity
Jon Collins	Leader	Nottingham City Council	Public	BioCity Nottingham, Phase 4

Draft: 3.3.2017