Regional synergies in Triple Helix regions

The case of local economic development policies in Oxfordshire, UK

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Abstract: *This paper examines the role of universities in delivering regional/local policy and the extent to which they help formulate that policy. It explores the incentives for universities to act. Two examples are the availability of government funding designed to foster university–industry interaction and the existence of specific local agenda that are of mutual interest to both universities and local policy makers. The paper also highlights the converse – policy might follow from the observed actions of the impact of universities' excellence (for example, the formation of university spin-offs). The authors consider how both translate into active involvement in local policy making using the case of the Oxfordshire high-tech economy. Oxfordshire is an important high-tech economy dominated by one of the world's leading research universities.*

Keywords: *institutional synergies; regional Triple Helix spaces; Oxfordshire*

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In addition to their first and second missions of, respectively, teaching and research, universities throughout the world are now expected to take on more targeted roles in economic development. In the UK, a key conclusion of the 2013 Witty Review of 'Universities and Growth' is that 'universities should assume an explicit responsibility for facilitating economic growth, and all universities should have stronger incentives to embrace this ''third mission''' (Witty, 2013, p 6). A key message is that because universities are centres of innovation and knowledge in a local area they can therefore play an important role in driving growth; indeed, the subsequent Adonis Review (Adonis, 2014) recommended that all universities in an area be represented on the boards of their Local Enterprise Partnership, following the influential 2003 *Review of Business–University Collaboration* which advocated increasing funding for promoting knowledge transfer (Lambert, 2003).

The Witty Review (Witty, 2013) provides a clear statement to government that the Triple Helix model of universities, industry and government (Etzkowitz and Leydesdorff, 1995) should take on both commercial and civic roles at the local level (see also Goddard, 2013) as well as at the national and global levels. This function or mission encompasses multiple forms of engagement – economic, social, cultural (Trippl *et al,* 2012) – with possibilities of multiple synergies. These are the benefits

arising from the cooperation of two or more organizations and other agents to produce a combined effect greater than that of their independent efforts. In this context 'synergies' refers to interactions between academic, public and private organizations to improve the local economic and social environment for innovative firms. The synergies take many forms, such as improving innovation in firms directly through technology transfer and, more generally, raising the skill base, the availability of finance, developing knowledge spill-overs such as the transfer of knowledge and through physical infrastructure improvements including transport and business incubators.

In this paper we ask, what should Triple Helix model regional synergies look like in Oxfordshire according to theory? What capacities are present which could support synergies and what are missing? We suggest that regional synergies would approximate to what Etzkowitz (2008) identifies as the third stage in the development of regional Triple Helix spaces. This is the creation of an 'innovation space' which includes realizing established goals through policy-making and improving the supply of finance through interaction between key local organizations. Of particular interest here is the 'instrumentalist role' whereby universities are now more explicitly part of a system of governance of regions (Charles, 2003). This is in addition to commercial exploitation of university knowledge that takes a number of forms such as spin-offs, patents, and licensing (Grimaldi *et al*, 2011). The instrumentalist role is also about the extent to which the university can be seen as a 'regional innovation organiser' (Etzkowitz, 2008) in leading local synergies. Models of such engagement, where universities or individual academics have played leading roles in local economic development, exist in Sweden (Etzkowitz and Klofsten, 2005) and in Cambridge (SQW, 2012).

The Oxfordshire case study illustrates where formal, institutional synergies would provide evidence of regional Triple Helix spaces. Oxfordshire can be described as a high profile 'science region' (Perry and May, 2007). It has a concentration of university, public and private sector research, high-tech entrepreneurship and highly-skilled individuals, and it has a premier university (the University of Oxford), a post-1992 university (Oxford Brookes) and a number public and private sector research laboratories. There is an implied connection between the research base and the growth of the high-tech economy (University of Oxford/Science Oxford, 2013).

The present paper positions the Oxfordshire case study within the UK policy framework at national, and since 2010 at local rather than the regional level, drawing on a series of studies undertaken since the 1980s (Lawton Smith, 1990, 2003; Lawton Smith and Bagchi-Sen, 2010, 2011; Lawton Smith *et al,* 2013; University of Oxford/Science Oxford, 2013). It does this firstly by positioning targeted local synergies within a regional Triple Helix spaces model framework. Secondly, it examines key national policy documents that relate to the role of universities as primary agents in local economic development policy. In doing so it considers the extent to which the regional Triple Helix spaces model is explicit or implicit in these documents. Thirdly, it considers how Oxfordshire's local regional Triple Helix synergies can be seen as an outcome of place-based national/local policies. It demonstrates that Oxfordshire's universities comprise an element in a proto-regional Triple Helix spaces model, but that model does not appear to be fully functioning in spite of national policy agendas. The paper's contribution therefore is to highlight the construction of the local context – in other words, the extent to which broader political, economic and social environments influence the forms that synergies take in regional Triple Helix systems. It thereby addresses a criticism of the model that it is inadequately contextualized (Cooke, 2002).

Regional Triple Helix: theory and practice

Theory

Places that are defined by growing high levels of entrepreneurship and innovation, and as regions with outstanding entrepreneurial visions are designed as 'entrepreneurial regions' (EU, 2013). These are regions where synergies between various organizations have developed as a result of a commitment to developing their entrepreneurial potential through long-term sustainable and credible actions. In such regions it is presupposed that a necessary condition for economic growth is a commitment by local Triple Helix actors – universities, industry and government – to work together (Etzkowitz and Leydesdorff, 1995). In so doing the objective is to continue 'good' paths of development or change unsuccessful economic trajectories by developing new (and better) ones.

The form these relationships take, their drivers and their outcomes are a reflection of context-dependent forces and agendas. Regional Triple Helix formations exist within national (and international) contexts each with different kinds of networks and interactions forming mutual information among the geographical, technological and organizational distributions in terms of synergies at regional and national levels (Leydesdorff and Strand, 2013) to create, enhance or mobilize resources. This requires building institutional capacity for Higher Education Institution (HEI) regional engagement (Benneworth and Sanderson, 2009).

Universities in the Triple Helix model then are subject to context-specific environments which include their formal position within national systems of innovation (Freeman, 1988) including the degree of autonomy to shape their own policies and how they are funded. These are shaped by political environments imposed nationally, internationally or regionally and the economic context (see, for example, Freeman, 1988; Freeman and Perez, 1988), as well as technological advances.

The concept of regional Triple Helix spaces (Etzkowitz, 2008) proposes changes in relationships between actors over time in particular contexts. The regional space itself consists of political organizations, industrial entities and academic institutions that work together to improve the local conditions for innovation. This is based on analysis of what is appropriate to a region's problems and opportunities. The model encompasses three stages. The first stage is inception of a knowledge space, where there is a concentration of related research and development (R&D) activities and a small but growing population of entrepreneurs. Hence there is potential for collaboration among different actors. The second stage, a consensus space, sees an increase in entrepreneurship activity, the emergence of networks between entrepreneurs and other actors (academic, public, private), and the formation of local growth strategies. The last stage is the innovation space where goals articulated in the previous phase are attempted to be realized.

Evidence of the environment in which regional or local synergies might be created include finance, availability of skilled people who could facilitate knowledge-spillovers, physical infrastructure such as incubators and science parks (Goldstein, 2009) and synergistic policies designed to improve that environment. Synergies include information gathering through formal and informal networks with other firms and research institutions (Benner, 2003; Huggins, 2010).

Some local synergies arise from the presence of universities in their local economies – for example their contribution to the local labour market as graduates and former employees remain in the local labour market and stay in contact with their universities and introduce colleagues via networks to contacts in the universities. Likewise, university spin-offs play similar roles (see Lazzeroni and Piccaluga, 2003). Moreover, universities are important local employers and many offer teaching programmes that are of direct relevance to local industry (see Glasson, 2003). In sum, university engagement in local economic development is subject to a number of external and internal factors. What matters in practice are the incentives for universities to engage in creating synergies in locally specific Triple Helix spaces. However, policy institutions in different countries tend to favour different models of university third mission engagement (Trippl *et al,* 2012).

UK Practice

In top-down policy systems such as those in the UK and France, it is the national government that sets out the vision behind economic development at the sub-national level, and to a large extent dictates the availability of external resources. This vision is published through mandated policy documents and through reports which propose policy agenda which may or may not become translated into policy. Within the government sphere is a nested smaller sphere of regional/local policy – where national policy shapes regional policy and where local economies propose their own.

In order to put the third mission role into context, a review of the state of thinking (in the form of current UK Coalition government (2010–) White Papers (policy documents) Reviews and Reports (recommendations) is shown in Table 1. It is these reports that set out what the universities could and should deliver by way of creating synergies – *per se* and at the local level – within the UK national and local models. However, it needs to be borne in mind that universities are autonomous charitable bodies and as such are constrained in their activities by the Charities Act. In principle they can therefore choose whether and by how much to engage in local economic activities.

By way of context, the case for the third mission role of universities was made very strongly in the *Review of University Business Interaction* (Lambert, 2003) which advocated that funding which promoted knowledge transfer be increased. The regional role received some attention, but there was a particular focus on the importance of universities as part of strong clusters and the role of the then Regional Development Agencies (RDAs) in building university–industry relationships. RDAs have subsequently been replaced by Local Enterprise Partnerships (LEPS) (see below).

In principle, therefore, a coherent body of government documentation exists that relates to the third stream role of universities at the local level. The Wilson Review (Wilson, 2012) and the Heseltine Review (Heseltine, 2012) emphasized the importance of maximizing the benefits of the research base to economic development. The Witty Review (Witty, 2013) spelt out a vision of how universities should support growth by working with organizations such as LEPs in building on sectoral strengths and clusters.[1] It recommended that universities should be put at the heart of LEPs across the country. What is not included in the Witty Review is student entrepreneurship, which is of growing policy importance in the UK and Europe – this

Table 1. Major policy documents and reviews since 2010 noting an explicit role for universities in economic development.

Document/Reference	Main argument and policy	Geographic focus
Wilson (2012) *Review of University–Business Collaboration*	Universities as the strength of the UK's knowledge-based economy.	National but specific recommendation that universities should be at the heart of LEPs.
Heseltine (2012) *No Stone Unturned in Pursuit of Growth*	Rebalancing of responsibilities between central and local government, and government and the private sector.	Local.
Witty (2013) *Encouraging a British Invention Revolution: Sir Andrew Witty's Review of Universities and Growth*	Universities generating cutting-edge research and resulting insights may be likened to the tip of an arrow. Incentives should be strengthened to maximize engagement in the third mission. Put universities at the heart of LEPs.	National but strong local component – diversity of university institutions have a role to play from local SME support to invention.
BIS (2014) *International Benchmarking of the UK Science and Innovation System*	Science and innovation at the heart of UK's future success, world-class higher education institutions, but weaknesses in the talent base, structural under-investment.	National.

Source: Authors' survey.

was highlighted in the Browne Review (Browne, 2010). However, commenting on Witty, as Goddard (2013) observes, the Department for Business Innovation and Skills (BIS) has a limited view of the role of universities in local economies, thus underplaying the much wider possibilities for local synergies. Contemporary with this rhetoric, there are other drivers of university engagement in economic activities. In the UK this includes that of 'impact' through the 2014 Research Assessment Framework, a process of expert review of university research and its impact leading to significant differentiation of central government funding between institutions.[2]

Moreover, compared to other sources of funding, such as science and defence, the allocation of direct funding for the regional role is rather small. For example, £4.6 billion per year has been allocated for science and research programmes compared to £6.2 billion over 5 years for local growth which includes funding for university–industry engagement (see below).[3] Furthermore, science policy continues to favour core regions and has a far more structural effect on reinforcing islands of innovation (Hilpert, 1992) and regional Triple Helix spaces (Etzkowitz, 2008) rather than other forms of funding. In contrast to funding for social inclusion policies, resource aimed at embedding competitiveness is skewed towards to Greater South East (that is, the London, East of England and South East of England NUTS1 areas). For example, in January 2013 £600 million funding for science and research in 'eight great technologies' identified as strategic by the national government was announced. The eight technologies are big data, space, robotics and autonomous systems, synthetic biology, regenerative medicine, agri-science, advanced materials and energy. The funding is for research into cutting-edge technology and is designed to help make the UK one of the best places in the world to do science. It is likely that these will reinforce existing 'science regions' (Perry and May, 2007) and will also have an impact on policy choices at the local level.

This suggests that the local role is not as 'strategic' as the rhetoric might suggest and that funding has a symbolic incentive element rather than providing sufficient funding to make it worthwhile for universities to make radical changes in their strategies. Recent intervention has brought about instrumentalist changes – at least in local institutional arrangements (Charles, 2003). This is discussed further below.

At the European level, European structural funds as well as funding for scientific research and European regional policy (most recently that directed towards achieving 'smart growth based on innovation') reinforces those effects (see Foray and Goenega, 2013). The need for synergies has been emphasized in the Smart Specialization at the regional level (EU, 2013). Universities are described as being a critical 'asset' of the region, but of interest primarily in less developed regions with relatively weak or small private sectors with low levels of research and development activity. The range of mechanisms by which universities can contribute to regional innovation systems and the barriers and challenges identified are well rehearsed in the academic literature. However, the EU document does state that, 'Universities and other knowledge institutions should be closely linked to the process of

Table 2. Current funding for local economic growth.

Initiative	Objective	Funding	Synergistic elements	University role
Local Economic Partnerships, 39 approved by December 2011	Business-led agenda. Small strategic partnerships will provide vision and leadership to drive local growth.	Local growth funds £2 billion annually from 2015–2016, plus control over £5 billion EU structural funds. £21 million running costs 2014–2015.	Shifting powers to local businesses.	At the heart of LEPs (Witty, 2013). Mostly through representation on boards.
Enterprise Zones, 24 operating by April 2012	Encourage businesses to start up or expand. Businesses eligible for a business rate discount of up to £55,000 a year for five years.	2014–2014: £223 million. 2013–2014: £94 million.	A supportive environment with the state working with industry.	Universities and research institutions may be part of portfolio.
Growing Places Fund	Encourage development of short-term infrastructure.	Revolving investment funds overseen by LEPs.	Investment in the environment for synergies.	Incubators?
City Deals	Intended to give participating areas the ability to use budgets better for local needs such as training and skills, roads and other developments. Areas must demonstrate that they have a strong plan for local growth.	2013–2014: £118 million (peak year). 2012–2013: £33 million.	New powers and freedoms and funding mechanisms to local decision makers.	Possible partners.

Source: NAO (National Audit Office) 2013.

designing national/regional innovation strategies for smart specialization' (EU, 2013, p 79). They are needed to help develop strategies and act as intermediary bodies for the implementation of delivery mechanisms. This places them as authors of a strategy for synergies, and as delivery agents.

Practice: UK local policy environment and role of universities

In spite of the national rhetoric, we shall show that what are missing are targets for Triple Helix interactions and synergies in Oxfordshire. Most policies focus on the environment for local synergies rather than on developing synergies. At the heart of the problem is that policy is developed top-down and, even where environments are rich, as will be shown later in the case of Oxfordshire, it is very difficult for a regional Triple Helix space to be built. This is despite the fact that since 2010 public policy is in principle intended to be more locally driven and locally accountable.

In 2010, the Coalition government redrew the map of mobilization and institutional creation previously developed (1997–2010) by successive Labour Governments which was focused on the regional level. UK local policy is now designed on the premise that local strengths should be built on, when RDAs, established in 1999, were abolished and replaced by LEPs in 2010. New local development plans set out in the 2010 White Paper *Local Growth: Realising Every Place's Potential* were part of the national economic policy set out by the Treasury and Department for Business, Innovation and Skills in the 2011 *Plan for Growth.* LEPs are 'joint local authority/business bodies that reflect genuine economic areas to promote local economic development'. In themselves they comprise a mini-Triple Helix having representatives from universities, business people as well as local government.[4] Consistent with the local Triple Helix spaces model is the requirement for the business-led LEPs to involve key local stakeholders such as universities. In 2013, 35 of the 39 LEPs had a university representative on their board. Key current policies are shown in Table 2.

Over the five-year period, 2010–2011 to 2014–2015 the government was expected to spend some £6.3 billion on local growth programmes, including the £2.4 billion spent by the RDAs and £3.9 billion spent on new funds and structures listed in Table 2. This means a

reduction in funding for local growth programmes since the abolition of the RDAs. Hence local powers to improve the economic and innovation environment have decreased. In comparison, the RDAs spent £11.2 billion over the five-year period 2005–2006 to 2009–2010 (NAO, 2013).

Other funds have included the Regional Growth Fund, a £2.6 billion fund operating across England from 2011 to 2016, which supports projects and programmes using private-sector investment to create economic growth and sustainable employment; and the Growing Places Fund provides a further £500 million to enable the development of local funds to address infrastructure constraints, promoting economic growth and the delivery of jobs and houses.

National government funding for science has pronounced spatial outcomes – for example, the continuing dominance of research funding in the 'Golden Triangle' of Oxford, Cambridge and London universities. Furthermore, on every indicator of performance it is London and the South East of England that perform better than the rest of the country. Within the UK government's policy framework, Perry and May (2007, p 1041) had noted a 'policy blurring between science, innovation, higher education and regional policy'. The spatial dimension to regional policy was couched as either passive (regions as stages and regions as implementers) or as active (regions as partners and regions as independent policy makers, with an increasing role for the RDAs (Perry, 2007), as well as Regional Science and Industry Councils, which were given a role of 'encouraging universities to develop their third mission or third leg', thus being key actors in driving local economic development. Perry (2007) argued that the centralized policy process in the UK had thus been subtly transformed in the generation of linkages (synergies) between the research base and industry. She suggests that the novelty of the English case (Scotland and Wales having their own regional – national – development agencies) is not the changing dynamics of national science policy but extensive sub-national mobilization and institutional creation.

It might be expected that with Oxfordshire's privileged position in the science base and the possible blurring of policies (Perry, 2007) there would be common interests that would encourage Triple Helix actors to work together to create the environment in which local synergies between the players in each Helix would work together. However, as the National Audit Office (NAO, 2013) commented, 'It has not yet been demonstrated that Local Enterprise Partnerships, Enterprise Zones and City Deals, and funding mechanisms for supporting local economic growth, such as the Regional Growth Fund, are capable of delivering value for money'.[5] At issue is the difference in the rates at which LEPs are making progress and the limited evidence on the effective use of the Growing Places Fund, particularly in creating jobs. Moreover, it matters whether proper evaluation procedures are in place by which outcomes can be measured. Evaluation of the implementation of the Growth Deals, announced in July 2014, can be expected to follow. The Government stated its faith in LEPs in its response to the Heseltine Review, reiterating that its 'radical approach to decentralisation that will give business-led LEPs the power to make the choices that are right for their local economies' (HM Treasury and BIS, 2013, p 5).

UK regional Triple Helix in policy: Oxfordshire

In this section, evidence of environments for synergies is explored using the regional Triple Helix spaces concept as a base point. It is shown that as the high-tech economy has developed the incentives for policy makers to incorporate universities and the research laboratories into local policy, in line with national policy, has also expanded. In addition, there are clear examples of where industry (local private sector organizations) and some research organizations have bought into the regional Triple Helix spaces concept.

Oxfordshire in context

Oxfordshire is some 60 miles (96 km) north west of London, and is served by major road, rail and air transport routes. By way of context, in the late 1990s the county had made a transition from a traditional economy to a dynamic high-tech economy. Recent estimates of the size of the high-tech economy puts it between 1,500 (Oxford University/Science Oxford, 2013) and 2,000 (Waters and Lawton Smith, 2012) firms employing some 43,000 people representing 13.4% of total employees, compared with an average in England of 9.8%. The county has a highly skilled labour force, with a higher proportion of graduates than in any other English county. Indeed, more than 33% of founders of high-tech firms reported in 2013 that one or more of their founders had come directly from employment with either the University of Oxford, Oxford Brookes University, an Oxfordshire-based research establishment, or another business in the county (University of Oxford/Science Oxford, 2013). This proportion has been increasing since the 1980s (Lawton Smith, 1990). The firms are distributed widely around Oxfordshire. The area to the south, including Milton Park and Harwell, has been variously branded the South Oxfordshire Quadrant (SQW, 2007) and more

recently Science Vale UK. It has a particularly high proportion of high-tech activities.

Associated with this rise in high-tech activities is the extremely strong research base in the form of Oxford University, Oxford Brookes and some 10 research laboratories (for example in nuclear energy, space and biomedical science). In addition to its universities, Oxfordshire has a dense concentration of research institutions specializing in biomedical research. Some are attached to the University of Oxford in the form of charity-funded institutes, some are free-standing institutes based in Oxford, with the others located in the south of the county on the Harwell Science and Innovation Campus. Oxford University has engaged in an extensive range of technology transfer activities through its technology transfer organization Isis Innovation, established in 1988. The local, national and international impact of Isis Innovation has grown broader and stronger as it has captured more of the wealth creating and outreach roles within the university. It successfully commercializes its research through robust spin-offs, patents and licences, thereby increasing the value realized to Oxford University of its intellectual property (Lawton Smith and Bagchi-Sen, 2012). More than 70 university spin-offs have been supported since the establishment of Isis Innovation in 1997, and 200 licence agreements have been secured (University of Oxford /Science Oxford, 2013). With respect to reinforcing regional specializations, in 2010 the University was ranked 7th of the participant organizations in EU 'Framework 7' programmes. As a result of a combination of these activities, Oxfordshire has a strong representation of the 'eight great technologies' (SQW 2013, p 22).

However, a relatively small proportion of University of Oxford's business-facing activities are with organizations based in the surrounding area. While data on the exact location of partners are not available, HEBCI data do provide information on interactions with partners in the South East region (excluding Greater London).[6] This shows that foreign firms sponsored more research (£22 m) than UK businesses (£17 m), although the university was still the second highest generator of research funds from UK businesses. Only 5% of all business sponsored research was for businesses in the SE. Only 6% of consultancy, CPD and use of technical facilities were for businesses located in the South East (University of Oxford/Science Oxford, 2013). Thus in spite of the concentration of R&D, the existence of a local 'knowledge space' in which collaboration/ synergies occur appears to be limited.

Building on strengths and overcoming barriers. Against this background of strong entrepreneurship, science and skills, several initiatives to bring about greater collaboration between the Triple Helix actors have been initiated as a result of Coalition government policy. These are set to institutionalize the instrumentalist role that has been missing as result of a lack of commitment from the local authorities and the universities (Lawton Smith, 1990; Waters and Lawton Smith, 2002; Lawton Smith *et al,* 2013).

The objective of institutionalization is to overcome weaknesses in the Oxfordshire economy which have resulted in unexceptional, and in some respects disappointing, performance (Oxford University/Science Oxford, 2013). First, we record the main initiatives designed to improve synergies. In particular, we focus on the LEP, the City Deal and Science Vale UK because these are the ones which specifically name the universities as players (see Table 3).

The Oxfordshire LEP is countywide. At the time of writing (mid-2014) the Oxfordshire Strategic Economic Plan being prepared by the LEP seeks '. . . to direct growth in Oxfordshire in the medium to long term. The SEP will determine how much of the national £2 billion Single Local Growth Fund will come to Oxfordshire'.[7]

The universities' Pro Vice-Chancellors (PVCs) have specific roles on the LEP Board. The Oxford Brookes PVC's area of Responsibility is Communications, whereas Oxford University's PVC is responsible for Innovation. National policy provides incentives for the universities to join the LEP which would make it difficult for the universities to ignore. Moreover, membership is a continuation of other local policy making bodies which have been and gone. They are therefore symbolically seen to be part of the local 'innovation space' even if they have few levers to pull in the way of budgets but in principle have more in the way of influence because of the organizations they represent – should they choose to use it.

However, universities' role in local economic development goes far beyond this membership role because of the research strengths. For example, the Smart Specialization agenda in the Oxford Business Plan for Growth in 2013 highlights four of the national eight great sectors as having the greatest potential for growth: life sciences, high performance technologies, space and energy.[8] All of these reflect the strengths of the universities and research laboratories.

The LEP is also developing a strategy to use its €19.4 million EU funding under the European Structural Investment Fund allocated in June 2013.[9] This is designed to identify priorities and align them with the City Deal (see below). However, unlike the City Deal, which '. . . focuses on the delivery of an ambitious knowledge economy', European Funding is for the whole of Oxfordshire. This funding for

Table 3. Local policy and synergies.

Initiative	Objective	Triple Helix synergistic elements
Oxford and Oxfordshire LEP 2011	'Realising Oxfordshire's potential'.	Active regional role for Oxford's two universities. University of Oxford and Oxford Brookes University are members of the LEP board at Pro-Vice-Chancellor level, 'reflecting their role in supporting and promoting enterprise in the local economy'.[a]
Oxford and Oxfordshire City Deal, launched January 2013, signed February 2014	To '[a]ccelerate the growth of the city region's knowledge-based economy'. Intended to give participating areas the ability to use budgets better for local needs such as training and skills, roads and other developments. In return, the areas must demonstrate that they have a strong plan for local growth.	Brings together all six Oxfordshire councils, the two universities, big science facilities at Culham and Harwell to the south of the county, and the Oxfordshire LEP in a unique joint proposal that seeks to boost the knowledge economy and create a new partnership for growth.[b]
Growing Places Fund The Science Vale Enterprise Zone	Plans for growth in 7 key sectors. Intended to 'harness the region's unparalleled research and development base to create a wealth of innovative and high growth businesses'.[c]	Finance, skills, etc. Covers two district councils sites at Harwell Oxford and MEPC Milton Park bringing together local actors.

[a]http://portal.oxfordshire.gov.uk/content/publicnet/other_sites/LEP/meetings/executive/GovernanceandWorkingArrangementsAgreedMarch2012.pdf (accessed 04 March 2014).
[b] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276205/Oxford-Oxfordshire-City-Deal.pdf (accessed 24 February 2014).
[c]http://www.sciencevale.com/the-partnership/why-science-vale-uk/ (accessed 24 February 2014).

innovation includes rural areas and the 12 most deprived areas in the county.

The City Deal is designed to improve collaboration between major local government organizations (Oxford City Council and Oxfordshire County Council), business leaders and education providers, and so on, that traditionally have not always worked together.[10] In the case of Oxford City Council (Labour Party dominance) and the County (Conservative Party dominance) long-standing political/ideological differences have limited cooperation and therefore institutional synergies (Lawton Smith, 2003). Joint targets in principle are now innovation, skills, finance and infrastructure.

The inclusion of universities in City Deals introduced in 2012 is intended to contribute to rebalancing the economy geographically. While for some areas the focus is on regeneration, for others – such as Oxfordshire – the City Deals are designed to support innovation-led strategies. The Oxford and Oxfordshire City Deal is based on a network of innovation and incubation centres which will drive business growth, and an innovation support programme which will strengthen innovation networks.[11] Under the City Deal, funding for four innovation hubs was announced in January 2014 as part of £1.2 billion deal.[12] These hubs will be established along Oxfordshire's 'knowledge spine' at Harwell and Culham in the south (the Harwell Innovation Hub and the UKAEA Culham Advanced Manufacturing Hub) to the life science BioEscalator for the life sciences sector in Oxford and the advanced engineering hub at Oxford University's Begbroke (Begbroke Innovation Accelerator) in the north. The intention is to make the county a true 'knowledge space' by creating synergies to make the most of its world-renowned science and research by creating jobs and driving the local economy in the future. The City Deal also has the objective of developing synergies to make major improvements in local roads and public transport. In particular these are intended to be tailored to link universities with the city's major industrial and research areas.

Science Vale UK (SVUK) is an exemplar of an entrepreneurial vision and of coordinated practice and represents a true regional Triple Helix innovation space. The initiative shows how policy involvement is being attracted to both private-sector and public-sector excellence and represents the potential of this scientific 'regional Triple Helix space'. This potential is being reinforced by central government funding since its award in 2011 of Enterprise Zone status. SVUK's synergies arise from a collaboration between Harwell, Milton Park (the largest business/science park in the

county), two local district councils (Vale of White Horse and South Oxfordshire), the Oxfordshire Local Economic Partnership, Oxfordshire County Council and the Science and Technology Facilities Council (see Lawton Smith and Glasson, 2010). Reflecting its concentration of large science laboratories, a key sectoral strength of this cluster is energy. It provides a number of entrepreneurial resources: for example, the Rutherford Appleton Laboratory has continued to expand in both basic science and in skills training, while the Harwell site and Milton Park provide major infrastructure assets.

SVUK also has a skills strategy, designed to create synergies between key local actors. The Enterprise Zone (EZ) Skills Project has been run for two years, starting in spring 2012, by the SVUK Skills Steering Group, which has overseen the work of the SVUK Skills Project. The Steering Group includes representatives from all stakeholder groups including employers, training providers, FE colleges, HEIs, secondary schools, the National Apprenticeship Service and the Careers Service. Outcomes of the project include a SVUK Skills Needs Analysis, a structured science, technology, engineering and maths related questionnaire aimed at examining EZ employer needs from both technical and academic perspectives; research into the skills needs and labour demands for the future in relation to biotech and medtech, cryogenics, space, advanced engineering, and ICT/digital economy.[13]

The SVUK project brings into contrast a lack of formal, institutional leadership and fragmentation that has been long present in the county. Oxford University/Science Oxford (2013) has highlighted the absence of strong local public and private sector leadership, and a role to play for the University of Oxford and its Colleges to agree a long term development strategy.

Conclusions

This paper has addressed how national policy has brought universities into activity policy making at the local level, designed to improve local synergies with regional or, in this case regional Triple Helix, innovation spaces (Etkzowitz, 2008). The Oxfordshire example illustrates how the institutional environment for local synergies has developed as national politics arising from the replacement of Labour governments, which prioritized the regional scale, by the Coalition government which has made the local level the locus of decision-making. In principle, as set out in the 2013 Witty Review, universities should be primary agents of change. Indeed for the majority of the LEPs, as in Oxfordshire, universities, are represented on their Boards. Collective targets of policy within each of the three Triple Helix spheres at the local level now include innovation, skills, infrastructure and finance. To date there is no evidence of any difference being made by these institutional synergies with the possible exception of the four innovation centres as part of the City Deal.

However, in spite of Oxfordshire's economic success and its position as one of the UK's leading high-tech economies, institutional intervention to encourage universities to be 'regional innovation organizers', is based on the recognition that the county is a long way from fulfilling its potential. With the exception of Science Vale UK, the implications of the evidence are that there is fragmentation that needs to be overcome in order to achieve better economic performance, through the creation of better integration between Triple Helix actors which, in turn, will lead to greater collaboration between and within the three spheres (Leydesdorff and Strand, 2013). To date there is evidence of proto synergies underpinning regional Triple Helix spaces – for example with the presence of universities on the board of the LEP. The extent of the effectiveness of the LEPs to deliver economic growth (see NAO, 2013) through the various national and EU funding programmes will take time to become apparent.

Furthermore, as Goddard (2013) points out, in a global marketplace and in a time of austerity, English universities lack the resources to deliver public goods that embed the university in the city and contribute to its economic, social, cultural and environmental development. If such activities do not directly feed into a university's bottom line (its ability to generate a financial surplus) it is significantly more likely to disengage and hence its role as a primary agent of change will be limited.

For places like Oxfordshire, the local Triple Helix engagement agenda may or may not matter that much, except where there is a realistic chance of an integrated science-led innovation strategy in the case of SVUK, but one in which Oxford's universities are not playing a central role. The UK national agenda of building on the science base is now articulated in the City Deals. Oxfordshire is a particular beneficiary of this targeted funding – which is small-scale compared to the much larger funding for science excellence of which Oxford, as one corner of the 'Golden Triangle', is a major beneficiary.

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Notes

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