

From Knowledge-Based Economy to ... Knowledge-Based Economy? Reflections of Changes in the Economy and Development Policies in the North East of England

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FROM KNOWLEDGE-BASED ECONOMY TO □ KNOWLEDGE-BASED ECONOMY? REFLECTIONS OF CHANGES IN THE ECONOMY AND DEVELOPMENT POLICIES IN THE NORTH EAST OF ENGLAND

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Keywords:	Knowledge, Learning, Regional development, State policies, North east England, Regional innovation systems



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3 FROM KNOWLEDGE-BASED ECONOMY TO ... KNOWLEDGE-BASED
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5 ECONOMY? REFLECTIONS OF CHANGES IN THE ECONOMY AND
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32 ABSTRACT

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34 Against the background of claims made about the emergence of a new
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36 Knowledge-based Economy, I explore the role of knowledge, learning and
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38 innovation in the economy and in relation to regional economic development and
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40 to successive conceptions of regional development policies through the lens of the
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42 successive transformations of a particular regional economy – that of north east
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44 England. Rather than seeing knowledge as something that has only recently
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46 become relevant to economic performance and to understanding of the economy
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48 and economic development, I argue that knowledge is central to all economic
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50 activity, and that different types of such activity draw upon and require different
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52 types of knowledge.
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KEY WORDS

Knowledge; learning; regional innovation; regional development; state policies;
north east England; capitalist development; commodity production

Ray

HUDSON从知识经济到知识经济？反思英国东北部经济及发展政策变化，区域研究。在认为新知识经济已经出现的背景之下，笔者透过英国东北部区域经济连续转变的视角探索了知识、学习以及创新在经济中所扮演的角色，以及与区域经济发展、与区域发展政策之间的关系。不同于将知识视为仅仅与经济表现、与理解经济以及经济发展相关，笔者认为，知识是所有经济活动的中心，不同类型的经济活动引发并且需要不同类型的知识。

知识 学习 区域创新 区域发展 国家政策 英国东北部 资本主义发展 商品生产

D'une économie fondée sur la connaissance à . . . une économie fondée sur la connaissance? Des réflexions sur l'évolution des politiques économiques et de développement dans le nord-est de l'Angleterre.

Sur un fond de revendications à propos de la naissance d'une nouvelle économie de connaissance, on examine le rôle de la connaissance, de l'apprentissage et de l'innovation dans l'économie et par rapport au développement économique régional et aux conceptions successives de la politique d'aménagement du territoire du point de vue des transformations successives d'une économie régionale particulière - à savoir, celle du nord-est de l'Angleterre. Plutôt que de considérer la connaissance comme un facteur qui n'a aucun rapport ni à la performance économique, ni à une compréhension de l'économie ou du développement économique, que récemment, on affirme que la connaissance est essentielle à toute activité économique, et que diverses catégories d'une telle activité puisent dans et nécessitent diverses catégories de connaissance.

Connaissance / Apprentissage / Innovation régionale / Aménagement du territoire / Politiques gouvernementales / Nord-est de l'Angleterre / Développement capitaliste / Production des articles

**Von der wissensbasierten Wirtschaft zur ... wissensbasierten Wirtschaft?
Überlegungen über die Veränderungen in der Wirtschafts- und Entwicklungspolitik
von Nordostengland**

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Vor dem Hintergrund des angeblichen Entstehens einer neuen wissensbasierten Wirtschaft untersuche ich die Rolle von Wissen, Lernen und Innovation in der Wirtschaft und in Bezug auf die regionale Wirtschaftsentwicklung sowie auf sukzessive Konzeptionen der regionalen Entwicklungspolitiken durch das Objektiv der sukzessiven Transformationen einer bestimmten Regionalwirtschaft – der von Nordostengland. Statt Wissen als etwas zu betrachten, das erst vor kurzem für die Wirtschaftsleistung und für das Verständnis der Wirtschaft und Wirtschaftsentwicklung relevant geworden ist, argumentiere ich, dass Wissen einen zentralen Bestandteil sämtlicher Wirtschaftsaktivitäten darstellt und dass für die verschiedenen Arten dieser Aktivität verschiedene Arten von Wissen erforderlich sind.

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KEY WORDS

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Wissen
Lernen
Regionale Innovation
Regionalentwicklung
Staatliche Politiken
Nordostengland
Kapitalistische Entwicklung
Warenproduktion

Desde una economía basada en el conocimiento hasta ... ¿una economía basada en el conocimiento? Consideraciones sobre los cambios en las políticas económicas y de desarrollo en el noreste de Inglaterra

Basándome en las afirmaciones sobre la aparición de una nueva economía basada en el conocimiento, analizo el papel del conocimiento, el aprendizaje y la innovación en la economía, con relación al desarrollo económico regional y los sucesivos conceptos de las políticas del desarrollo regional, a través de los objetivos de las sucesivas transformaciones de una determinada economía regional, es decir, la del noreste de Inglaterra. Más que considerar el conocimiento como algo que sólo hace bien poco se ha convertido en un factor relevante para el rendimiento de la economía y para entender la economía y su desarrollo, sostengo que el desarrollo es fundamental para todas las actividades económicas y que los diferentes tipos de estas actividades se aprovechan y requieren diferentes tipos de conocimiento.

KEY WORDS

Conocimiento
Aprendizaje
Innovación regional
Desarrollo regional
Políticas estatales
Noreste de Inglaterra
Desarrollo capitalista
Producción de productos básicos

JEL COD ES

Urban, Rural and Regional Economics; Political Economy; Public Policy; Capitalist

Systems

For Peer Review Only

Introduction

There is widespread agreement that all economic activity – as purposeful human behaviour – necessarily depends upon knowledgeable behaviour and intentional human action; without a knowledge base, such activity would clearly be impossible. Thus an economy that is not based upon knowledge is, literally, inconceivable. The creation of knowledge has been integral to the development of capitalist economies since they were first constituted as capitalist, as Marx and Schumpeter (among other political economists) emphasised. Much of the revolutionary potential of capitalism has always rested in its capacity to create new commodities and new ways of commodity production via successive radical transformations of the forces of production and the labour process. Marxian political economy, conjoined with more recent approaches such as those of the French regulationists (for example, see Jessop and Sum, 2007), continues to provide a powerful perspective thought which to understand the contemporary economy, especially in those versions of cultural political economy (for example, Sum and Jessop, 2008) that seek more explicitly to incorporate consideration of issues of meaning and semiosis with more traditional concerns of commodity production and value. Such perspectives of Marxian political economy inform the interpretative approach adopted in this paper approach

Much has also been written in recent years about knowledge creation and transfer and related issues from more recent and different theoretical perspectives, such as

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3 those of knowledge creation, learning and national and regional innovation
4 systems that place considerable weight upon knowledge and learning per se as
5 sources of competitive advantage and economic success (LUNDVALL, 1992;
6 NONAKA and TAKEUCHI, 1995). There are three main ways in which knowledge
7 is now seen as more important in the economy. Firstly, there is greater emphasis
8 on knowledge per se as a commodified output, in part linked to the greater
9 significance of symbolic products. Secondly, there is greater emphasis on
10 increasing the knowledge intensity of existing commodities, both material and
11 immaterial, shifting up the value chain towards more knowledge intensive
12 activities. And, thirdly, partly linked to this, are the increasingly blurred boundaries
13 between material commodities and services produced via the interaction of people
14 and things.

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34 Initially, influenced heavily by the experiences of parts of the USA, such as
35 California and New England, and the advocates of the 'triple helix' approach
36 (ETZKOWITZ and LEYDESDORFF, 2000) these placed most emphasis on flows
37 of codified knowledge within formal organisational and institutional structures and
38 upon links between 'high-tech' industries and entrepreneurial Universities in the
39 translation of scientific knowledge into innovative products and processes
40 (LUNDVALL and MASKELL, 2000). However, later and more nuanced approaches
41 placed more emphasis upon tacit knowledge and the interactions and relationships
42 between codified and tacit knowledges (for example, see AMIN and COHENDET,
43 2003; ASHEIM and COENEN, 2005; JENSEN et al, 2007).

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6 This growing emphasis upon knowledge has been influential in shaping new
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8 conceptions of urban and regional development policy and strong claims have
9
10 been made as to the potential of such developments for urban and regional
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12 regeneration, linking the knowledge-based competitive advantage of firms with that
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14 of territories defined at various spatial scales (BRACZYK et al, 1998; SIMMIE,
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16 1997). This draws attention to the significance of the place-specificity of processes
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18 of knowledge production and translation and the importance of tacit knowledge in
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20 enabling codified knowledge to be effectively deployed in the economy in place.
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22 The successful economies of fin-de-siècle capitalism are seen to be those of
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24 territories (cities, regions, national states) that, by good luck or judgment, have
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26 become constructed around activities grounded in valuable knowledges that can
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28 be literally capitalised and become a source of profit. The future success of these
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30 territories is seen to depend on the continuing production of new knowledge,
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32 translating this into innovative products and processes and maintaining first-mover
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34 advantages. This emphasis within policy discourse reflects perceived changes in
35
36 the ways that knowledge is now seen as important in the economy. The task of
37
38 public policy is then to try to ensure that the knowledge-based process of moving
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40 forward, ever onward and upward, is facilitated in successful places and that the
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42 lessons of their success are translated to unsuccessful places, in so far as this is
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44 possible within the parameters of capitalist social relations.
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Claims about the emergence of new KBEs can therefore also be seen as recognition that the knowledge bases of formerly successful economic activities (as registered in mainstream indicators of capitalist development) and the regional economies that these helped constitute have been rendered redundant by sectoral, technological and spatial shifts in the capitalist economy. Consequently, commodities that could once be profitably produced in a given place can no longer be so. This recognises that the economy is knowledge-based but that capital valorises some knowledges while devalorising others. Therefore, so the policy story goes, it follows that reconstruction of the economies of places that have become unsuccessful requires shifting to new activities with different knowledge bases that can be successfully capitalised and valorised and learning from the experiences of economic 'hot spots'. It is this that is signalled by normative claims about the perceived need to move trajectories and encourage and facilitate the emergence of a new KBE via specific forms of public policy that privilege particular sorts of knowledge and institutions in the creation and dissemination of that knowledge. In this, of course, there are two major assumptions. First, that the bases of success of the 'successful places' have been correctly analysed and diagnosed in terms of the primacy of such knowledge as the main source of competitive advantage. Secondly, that the direction of the causal links between theory and practice has been correctly specified. However, this is a matter of debate – some see theory as shaping practice, others see theory as reflecting practice while others see links between the two as reciprocal and complex, not

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3 easily amenable to sweeping generalization, leaving the issue of the effects of
4 policy unresolved (HUDSON, 1999; MORGAN, 1995; LOVERING, 1999).
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10 Seen in this context, the issues to be addressed in this paper can be re-stated in
11 terms of a number of questions. First, and centrally, how have changing
12 conceptions of the role of knowledge been reflected in successive strategies for
13 regional development in north east England, and in particular in the recent turn to
14 an explicitly knowledge-based economy? In turn, this requires some consideration
15 of broader questions. What is the role of knowledge relative to other factors and
16 processes as a source of competitive advantage? What is new and specific about
17 the role of knowledge at the leading edges of contemporary capitalist
18 development? What sort of knowledge, development strategy and policies are
19 required for what sort of economy? Indeed what may well be at issue is what we
20 mean by the economy, what counts as 'the economy', and how we conceptualise
21 it. This may involve consideration not simply of the differing knowledge bases of
22 varied types of economic activity but more fundamental questions relating to
23 different concepts of value and processes of valuation within a more
24 heterogeneous and plural conception of what is to be counted as 'the economy'.
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46 But this is to anticipate ...
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51 In this paper, therefore, and against the background of more general claims made
52 about the emergence of a new KBE (ALLEN, 2002; HUDSON, 2001; 2005;
53 JESSOP, 2000; LEINBACH and BRAUN 2001), I want to explore the changing
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3 role of knowledge in the economy through the lens of the successive
4 transformations of a particular regional economy – that of north east England –
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6 and the successive conceptions of development policy that have been pursued
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8 there and, if only implicitly for much of the time, shifting conceptions within policy of
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10 the required knowledge base for that economy to prosper. The remainder of this
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12 paper falls into five sections. First, I consider in more detail some of the claims as
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14 to what is seen to be new in terms of knowledge and the new ways in which
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16 knowledge is now seen as economically significant. The next section considers the
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18 emergence and development of the north east region's economy from the
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20 nineteenth century, as a centre of radical innovation and knowledge creation that
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22 underpinned its economic success. Thirdly, in response to the secular decline of
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24 that economy from the late 1950s, I examine the emergence of an alternative
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26 branch plant economy, with its very different requirements in terms of knowledge,
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28 and various alternatives that were explored to that largely unsuccessful
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30 development policy, such as the pursuit of endogenous growth through small
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32 firms. Then, in recognition of the limitations of all these various policy options, a
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34 new suite of policies that self-consciously sought to promote the emergence of a
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36 new and more managed KBE in the region began to appear from the 1990s.
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38 These are considered in the penultimate part of the paper. Finally I reflect upon
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40 this developmental and policy history and seek to draw some lessons from it.
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3 So what's new about knowledge in the 'new' economy and the way we think about
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5 it now?
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10 Given that there is a general acknowledgment as to the importance of knowledge
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12 in the economy, why then the recent widespread fascination, even obsession, with
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14 knowledge-based economies (KBEs), both in academic discourse and
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16 development policies? What is seen now as novel about the role of knowledge in
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18 the "new" economy)? What's all the fuss about?
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25 In recent years the social science and business literatures have become replete
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27 with claims as to the growing importance of knowledge and information flows in an
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29 (allegedly) weightless, de-materialised "new" economy of informational capitalism
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31 (CASTELLS, 1996), in particular in terms of the extent to which knowledge can be
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33 digitised, commodified, and capitalised to underpin a new knowledge-based
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35 economy. There are strong claims to the effect that this new economy operates in
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37 a complex, non-propinquitous, multidimensional cyberspace, with novel spatial
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39 dynamics grounded in the possibilities that cyberspace offers for simultaneous co-
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41 location of myriad entities and relationships (JESSOP, 2000, 4; see also
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43 LEINBACH and BRUNN, 2001). Moreover, there is no doubt that there has also
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45 been some growth in the importance of some sorts of knowledge and information
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47 in the economy in relation to material commodity production, to the production of
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49 high 'level services, and to the production of a range of 'symbolic' commodities.
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4 The selectively increased importance of flows of knowledge and information in
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6 some sectors of capitalist economies has highlighted the importance of processes
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8 of knowledge creation and flows of information within firms via a range of types of
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10 learning (such as single and double loop) and ways of learning (by doing, by
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12 imitating, by watching, in working and so on). These become linked in inter-related
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14 and recursive ways so that learning and innovation involve complex circuits of
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16 knowledge and information rather than the linear flows of the hierarchical R&D
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18 model. The growing distancing of many economic relations within an
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20 increasingly spaced-out economy as the locations of activities both within and
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22 between firms become further separated by physical distance is made possible by
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24 increasing digitalisation and other improvements in ICT and transport technologies.
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26 Flows of information both increase in volume and in distance travelled, as do flows
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28 of people as sites of embedded and tacit knowledges, in the process re-working
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30 the meaning of work in the globalising economy (JONES, 2008). More generally,
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32 there is evidence of the creation of new global circuits of intellectual capital
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34 (THRIFT, 2005).
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44 Recognising these recent changes, it is nonetheless equally important to
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46 acknowledge that the economy has always depended on knowledgeable workers,
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48 flows of knowledge and information and mixes of codified and tacit knowledge so
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50 that claims as to the increased importance of flows of knowledge and information
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52 for economic performance must be carefully qualified. What is at issue is the
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54 changing significance of knowledge, the varying 'mixes' and types of knowledge,
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3 and the routes through which they flow into the production of any commodity. For
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5 example, ALLEN (2002, 39-40, emphasis in original) emphasises “the symbolic
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7 basis of all forms of economic knowledge”. Furthermore, “different economic
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9 activities play across a variety of symbolic registers – abstract, expressive,
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11 affective and aesthetic – and combine them in ways that render sectors
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13 distinctive”. Symbolic knowledge is not, therefore, confined to the production of
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15 cultural commodities, and it may have become relatively more important across a
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17 range of other commodities. Conversely, producing symbolic outputs, as with
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19 services, typically requires substantial material underpinning and infrastructure, not
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21 least in creating specific settings to enable co-presence of producers and
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23 consumers. For example, IT services require particular sorts of buildings,
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25 computers, network connections, electricity – which requires power stations, which
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27 in turn require coal, oil, nuclear fuel, or some form of non-fossil fuel generating
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29 technology. The issue here is the complex connections between different bits of
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31 commodity production that allow the production of new “symbolic commodities”
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33 rather than the emergence of de-materialised commodities in a digitalised,
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35 weightless economy. The material basis and weight remain critical, albeit
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37 distanced from the particular sites from which flows of information and
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39 knowledge emanate.
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50 JESSOP (2000, 2) suggests that “what is novel in the current period [of capitalist
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52 development] is the growing application of knowledge in developing the forces of
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54 production and the increased importance of knowledge as a fictitious commodity in
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3 shaping the social relations of production". For example, one indication of this is
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5 the expanding volumes of patents awarded to companies involved in
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7 biotechnology and bio-engineering, which are positioned at the forefront of the new
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9 "knowledge economy" in which "information and ideas have become critically
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11 important economic assets" (BOWRING, 2003, 118), At least three processes are
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13 involved in transforming knowledge into a fictitious commodity, although it is
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15 important to acknowledge that these are not new to a capitalist economy but that
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17 they have increased in intensity and extent. These involve both qualitative
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19 transformations and flows of knowledge between people, companies and other
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21 organisations involved in the economy. First, the formal transformation of
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23 knowledge from a collective resource ('intellectual commons') into intellectual
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25 property as a basis for revenue generation (for example, as a licence or patent).
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27 Secondly, the formal subsumption of knowledge production under exploitative
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29 class relations through the separation of intellectual and manual labour and the
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31 transformation of the former into alienated wage labour, producing knowledge as
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33 an exchange value rather than as a use value. Thirdly, the real subsumption of
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35 intellectual labour and its products under capitalist control through their
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37 commodification and integration into a networked, digitised production-
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39 consumption process controlled by capital, of information produced by a firm not
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41 for its own use (as a use value) but to sell to another to deploy in its production
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43 process (as an exchange value).
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3 Thus the distinctive features of recent developments in circuits of knowledge and
4 intellectual capital are seen to relate to their global reach and speed of flow within
5 them, changes enabled by technological innovations in ICT and the deployment of
6 different combinations of knowledge in commodity production as the role of
7 knowledge in the economy has changed qualitatively. Paradoxically, however, the
8 greater fluidity in the movement of codified knowledge has enhanced the
9 significance of tacit knowledge and the key material sites in which it is produced
10 and circulated. It is these changes in the movement of information rather than
11 knowledge and learning per se becoming distinguishing features of the capitalist
12 economy that are crucial. There are, however, limits to such processes.
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14 Cyberspace is not a “neutral third space” between capital and labour, market and
15 state, public and private. Rather, it is a new terrain on which conflict between these
16 forces institutions and domains can be fought out. Consequently, irrespective of
17 the extent to which capital migrates into cyberspace, like all capital “it still depends
18 on territorialisation” – that is, on materialisation in specific spaces, cities and
19 regions. Indeed, “even e-commerce needs such an infrastructure, even if it
20 involves a ‘celestial jukebox’ sending digitised music on demand” (JESSOP, 2000,
21 4). This in turn suggests that those cities and regions in which such activities have
22 become materialised have become pivotal and will become of still greater
23 significance in shaping the development trajectories of capitalist economies and in
24 reproducing the map of uneven development. This suggests that the extent to
25 which peripheral places can gain as a result of the new developmental trends may
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3 be severely circumscribed, In turn, this calls into question claims that such polices
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5 constitute the panacea for the problems of such places.
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12 The Knowledge-based Economy, version I: the creation of a 'workshop of the
13 world'
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20 It is often remarked that north east England was once one of the 'workshops of
21 the world', a region transformed in the nineteenth century into one of the
22 birthplaces of industrial capitalism, a major site of production for key commodities
23 and raw materials of the era of carboniferous capitalism. This remarkable
24 transformation of the region via the creation of a new form of economy was above
25 all based upon invention, the creation of new knowledge, typically initially in the
26 form of tacit knowledge as a result of the practical activities of engineers and
27 working men, and its deployment in production via a range of radical product and
28 process innovations in chemicals, coal mining, the production and use of metals in
29 making ships, armaments, power stations and equipment and other complex
30 commodities linked to the production of the means of production (MCCORD, 1979;
31 NORTH, 1975).
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50 Thus this emergence of new forms of economic activity based around radical
51 product and/or process innovations and their deployment in commodity production
52 was nothing less than the creation of a new KBE. Newly produced scientific
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3 knowledge was combined with existing knowledges, both codified and tacit, to
4 form the epistemic basis of a new regional economy via translating new knowledge
5 into radical innovations. The interplay of codified and tacit knowledges, of new and
6 existing knowledges, and their resultant emergent effects, decisively shaped the
7 competitive advantage of firms in the region. As such, the region became a pivotal
8 location in the development of industrial capitalism, centred on major capitalist
9 enterprises. These were typically linked into 'coal combines' via a variety of
10 economic and non-economic relations and ties and deployed strategies of strong
11 Schumpeterian competition, based on first mover advantage and oligopolistic
12 market domination, if not quite monopolistic control of markets (HUDSON, 1989).
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29 Moreover, this emergent KBE was based on a combination of endogenous capital
30 and locally-produced knowledges with imports and inflows of both human labour
31 (from Ireland and other regions of the UK), knowledge and raw materials (for
32 example, by the 1870s, iron ores from Spain: BEYNON et al, 1994) and resulted in
33 substantial outflows and exports of commodities and capital to the markets of both
34 formal and informal Empires. For example, around the turn of the twentieth
35 century, around 80% of all capitalist ship production emanated from the region. In
36 these senses, it was from the outset a global region, deeply involved in the
37 production of globalised relationships and global flows of capital. However – and
38 this is a key point - all stages of the production process in these varied industries,
39 from R&D and the production of knowledge and its translation into new processes
40 and products to material commodity production, were located in the region which
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3 became, for capital at least, the centre of a virtuous spiral of accumulation and
4 growth¹. Moreover, high level scientific and technical knowledges to support such
5 R&D activities were underpinned by the development of Durham University's
6 activities in Newcastle, as Armstrong College focussed on activities as
7 engineering, with a direct feedback to the economy via the transfer of codified
8 knowledge about production processes and products (pre-figuring proposals and
9 developments around a century later: see below).

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22 The depression of the 1920s and 1930s had severe impacts upon this 'old'
23 industrial economy ('old' in the sense that it no longer enjoyed its former first-
24 mover advantage as innovations had diffused internationally). Nonetheless, it
25 managed to survive well into the 1960s, with a continuing although more selective
26 and sporadic history of knowledge creation, R&D, and radical product and process
27 innovation (much of it associated with the activities of ICI on Teesside). The inter-
28 war depression was characterised by severe job losses but, in general (there were
29 exceptions: colliery closures in west Durham and the closure of Palmer's Jarrow
30 shipyard by National Shipbuilders Securities: see WILKENSON, 1939), it did not
31 lead to large-scale capacity closure. While fixed capital was moth-balled and to a
32 degree devalorised, in general it was not physically and materially destroyed.
33 Consequently, when demand recovered the region's industrial economy could
34 respond and revive in terms of output and employment, though less so in terms of
35 fresh fixed capital investment In a way that typifies the contradictions of capitalist
36 development, the regional economy was pulled from economic crisis by the
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3 combined effects of the war economy and post-war reconstruction. As a result, the
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5 sclerosis that had set into much of the economy did not become visible in terms of
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7 indicators such as output, employment and unemployment until the late 1950s,
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9 initially in coal mining and shipbuilding, but then in a progressively wider range of
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11 “traditional” industries.
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17 However, the design and R&D teams of the major shipbuilding and engineering
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19 companies (for example, Swan Hunter and Reyrolle Parsons) and especially
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21 chemicals (ICI at Wilton alone employed more than 200 PhD research chemists) in
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23 the region remained intact throughout this period; some even expanded. Indeed,
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25 the concentration of highly qualified research chemists at ICI can be seen as
26
27 emblematic of the way in which knowledge creation had become intentionally
28
29 designed to underpin commodity production and the process of capital
30
31 accumulation. Moreover, to the extent that knowledge became patented and
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33 licensed to others, knowledge itself became capitalised, a commodity to be traded,
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35 bought and sold in markets. Nonetheless, in general this ‘old’ industrial economy
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37 had lost its radical innovative edge and the competitive advantages once conferred
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39 by its distinctive knowledge bases.
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49 There were a number of reasons for this, related to private- and public-sector
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51 decision-making processes. First, there were changes in corporate strategy: as
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53 commodities became mature, companies either went out of business due to
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55 intensified global competition or switched product and/or process and/or location
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3 and moved their R&D and related activities out of the north east (a process that
4 was still continuing into the 1990s: PIKE, 2005). This locational switch was an
5 integral part of changes in the international division of labour, and the rise of new
6 production centres in other parts of the world. Secondly, nationalisation led to the
7 centralisation of R&D in coal, energy and steel in locations outside the region.
8 Privatisation of formerly nationalised industries had the same effect: the move by
9 newly-privatised British Gas of its R&D activities from Killingworth to the south east
10 in the 1990s was the last in a series of such relocations. One critical consequence
11 of these moves was that the potential for translating high level knowledges and
12 skills into new activities in the region and a resultant transformation of the regional
13 economy onto a new knowledge base was lost.
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32 Interestingly, however, in one or two rare cases such a transformation of existing
33 firms onto a new knowledge base did occur, registered in development discourse
34 in the region (which is discussed more fully below) by recognition of the
35 emergence of new clusters from the late 1990s. For example, on Tyneside this led
36 to the emergence of a sub-sea technology cluster, evolving from offshore activities
37 that in turn had developed from previous shipbuilding activity. A second example
38 emerged in the Tees Valley, with a cluster of high-level globally competitive
39 engineering service firms evolving from firms that previously had been builders of
40 bridges, railways and related products but that now sell their knowledge and
41 expertise in design and project management in a global market. These
42 transformations are a product of the link between two sets of processes. The first
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3 relates to the creation of “redundant” or “slack” resources (human, technical and
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6 infrastructural) left behind by the decline of traditional industries. The second
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8 focuses on the processes of corporate and sectoral re-organisation, the
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10 identification of new market opportunities, the selection of promising avenues of
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12 development, the organisation or creation of a new architecture of knowledge
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14 production and utilization and the discovery of new methods of production
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16 organisation to enable the emergence of a new technological and/or market
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18 trajectory to absorb this slack and put it to productive use.
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24 While recognising the potential significance of these examples of successful
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26 adaptation for development strategies in the region, the fundamental point is that
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28 these remain just that – rare examples of a counter-tendencyⁱⁱ. The dominant effect
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30 of eroding the competitive edge provided by the knowledge bases that
31
32 underpinned the growth of the region’s “traditional” industries is that of decline – in
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34 capacity, output and jobs. This was disclosed and registered as a profound
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36 regional deindustrialisation, with all the socio-economic and political difficulties that
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38 it brought, Recognition of this led to attempts to create a different sort of regional
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40 economy, with a different knowledge base.
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48 The Knowledge-based Economy, version II: the branch plant economy and beyond
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53 As the “old” knowledge-based economy began to exhibit signs of decline as early
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55 as the 1930s, , there were moves to develop new forms of state policy that would
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3 help construct an alternative form of economy based around inward investment in
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5 'new' – to the region - industries. This policy shift was initiated by established
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7 capitalist concerns which sought to construct a state regional industrial policy to
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9 protect their own interests and to counter the threat of social unrest as a result of
10
11 rising unemployment and poverty. After a period of relative quiescence due to the
12
13 effects of the war economy and post-war reconstruction in stimulating demand for
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15 products made in the north east, this policy of industrial diversification was
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17 prosecuted with renewed vigour from the late 1950s once it became clear that the
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19 decline of the region's old industrial economy was secular rather than cyclical.
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27 While a strengthened central government regional policy had been in place from
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29 the late 1940s, it had been implemented very selectively and with little enthusiasm
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31 or vigour in the north east. Specifically, only branch plants and back office activities
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33 that would not compete on the labour market with established industries (coal
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35 mining, steel, shipbuilding and so on) were permitted to locate in the region
36
37 because their outputs were seen as vital to post-war economic recovery and
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39 national economic performance in the 1950s (HUDSON, 1989). Blocking the entry
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41 of potential competitors for male labour was crucial in ensuring that their labour
42
43 forces remained intact and production endangered by labour shortages. As a
44
45 result, such new branch plants as were permitted were concentrated in sectors
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47 such as clothing and consumer electronics, in which firms were primarily seeking
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49 to recruit female labour, while the expansion of public services such as education
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51 and health was also based upon enhanced female activity rates.
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6 However, once the “old” industrial economy was seen to be in secular decline,
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8 political-economic priorities changed. Not only was there a perceived need for
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10 alternative sources of male employment in the north east but unbalanced regional
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12 growth became recognised as a major impediment to achieving faster non-
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14 inflationary national economic growth. The solution to these problems was seen to
15
16 lie in a more vigorous implementation of a further strengthened central government
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18 regional policy, attracting new investment and jobs to the north east (and like
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20 regions), creating new sources of male employment there and reducing inter-
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22 regional differences in economic performance and growth rates.
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30 The emphasis in building a new form of regional economy around branch plants to
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32 a degree also reflected the emerging academic literature on corporate
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34 reorganisation and the new ways in which companies were using spatial difference
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36 as part of their competitive strategies as new geographies of production and
37
38 spatial divisions of labour were emerging. Regional policy sought to use this and
39
40 attract particular routine branch plant functions to the north east. This new branch
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42 plant economy required different sorts of knowledge and skills, with little or no
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44 demand for people with high level decision making, design and R&D skills. Instead
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46 it required people with more basic knowledge and limited qualifications but willing
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48 to accept the disciplines of Taylorised production in branch plants and back offices.
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50 This was still a KBE, but one based upon the import of codified knowledges as to
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52 how to organise routine production activities and requiring a limited range of skills
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3 and expertise within the region. Not only was there a much lower level of demand
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5 for people with mental and non-manual skills but such manual jobs as were
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7 provided were typically unskilled or semi-skilled and required different types of
8
9 social and technical skills and competences to those of the 'old' industrial
10
11 economy. As a result, there were often problems in getting men who had worked
12
13 in coal mines, steel works, shipyards and engineering works – above all those
14
15 engaged in skilled work, with occupationally specific skills, often based upon tacit
16
17 knowledge acquired 'on the job' - to work on factory assembly lines in the new (to
18
19 the region) consumer goods component production and assembly plants, in the
20
21 paper processing assembly lines of back offices, or in the new public service
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23 activities of education and health, with their emphasis upon caring and cleaning
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25 work. This was a key reason why this second version of a KBE in the region was
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27 associated with increased female employment and with feminisation and a shift in
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29 the gender composition of the labour force.
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39 This shift in the industrial and occupational structure of the regional economy, and
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41 its enabling and requisite knowledge bases was also facilitated by a variety of
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43 state-sponsored and/or organised training schemes to ensure the availability of
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45 workers with appropriate knowledge and skills. While the skill levels required of
46
47 the 'new' activities were generally modest, they were nonetheless skills (technical,
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49 personal, social and communication skills) that were not readily available in the
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51 region's labour market. Thus part of the offer to potential inward investors was that
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53 training would be provided to ensure that suitably qualified labour was available in
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3 sufficient quantity. This included specific training schemes for assembly line
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5 workers in the new automobile and electronics companies and later for the
6
7 substantial numbers recruited by a variety of call centres. However, the rigorous
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9 recruitment criteria of the new companies, in a labour market in which supply far
10
11 exceeded effective demand, meant that participation in these training schemes
12
13 was no guarantee of employment – for example, at one point in the early 1990s
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15 Nissan had over 33,000 applications in response to advertising the availability of
16
17 600 new jobs (HUDSON, 1995) ⁱⁱⁱ.
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25 The new manufacturing branch plants, increasingly a result of inward investment
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27 by multi-national corporations, were by-and-large demonstrably 'global outposts',
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29 subject to capacity cutbacks or closure because of decisions taken in distant
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31 locations, with often devastating effects in terms of job loss in the north east
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33 (HUDSON, 1995). Some closed very quickly, others never even opened (such as
34
35 the Siemens integrated circuit factory on north Tyneside), and on average the
36
37 lifespan of branch plants shortened as more and more locations competed for
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39 them. Despite claims about changes in the character of inward investment and the
40
41 emergence of embedded branch plants, with deeper commitments to the region
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43 and wider mandates (for example, to include limited incremental R&D activity), in
44
45 practice such plants are rare and hard to find. While Nissan has been located in
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47 the region for 20 years and elements of its supply chain have co-located in the
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49 north east, its factory at Washington New Town lost its mandates for R&D and
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51 some aspects of purchasing following merger with Renault. Nissan is therefore
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3 both a rare example of a plant that has remained for two decades, which sets the
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5 standard in terms of labour productivity and product quality for other plants in
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7 Europe and north America and by the standards of the north east provides well-
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9 paid and stable manufacturing employment, but also one which has become less,
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11 rather than more, embedded with the passage of time.
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17 While public sector back office activities of government departments have proved
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19 relatively stable, the later re-location of private sector back offices has exhibited
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21 greater volatility. Equally, while there has been an influx of call centres and
22
23 particular types of business process activity across a wide range of sectors, these
24
25 too are susceptible to closure and re-location in an intensely competitive global
26
27 market as locations in Canada, China, the eastern länder of Germany, India and
28
29 Russia seek to attract such labour-intensive (for now at least) activities. Although
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31 these are mostly “white collar” non-manual jobs, they too require only basic
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33 knowledge, skills and competencies, with often a greater premium on
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35 communication, personal and social rather than technical skills.
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44 By the late 1970s it was becoming clear that the dominant policy approach of
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46 attracting inward investment was failing to provide an adequate answer to
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48 problems of unemployment and lack of work in the region. The response to this
49
50 was to shift the emphasis in policy to encouraging endogenous growth and the
51
52 creation of self-employment in an emergent enterprise economy (HUDSON, 1998).
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55 This spanned a range of manufacturing and service activities, including tourism –
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3 the unifying factor seemed to be firm size rather than any more coherent shared
4 characteristics. However, such a policy shift also valorised a new set of social and
5 technical skills and competencies – summarised in terms of “entrepreneurship”
6 and “enterprise” – but these proved to be in short supply in the region. Put another
7 way, the policy switch to SMEs was predicated on untenable assumptions as to
8 the availability of particular sorts of knowledges and skills in the region – and was
9 silent about the need to devise an appropriate demand–side policy response.
10 When this conception of policy failed in practice to produce economic
11 regeneration, the stage was set for a different policy-led version of the KBE to
12 emerge, centred on new forms of knowledge and sites of knowledge production,
13 diffusion and transmission. In this, the emergent regional policy was influenced by
14 growing emphasis in parts of the social sciences on the (alleged) emergence of a
15 ‘new’ KBE and on the primacy of particular socio-spatial formations of this
16 economy. It was also influenced, decisively, by the dominance of neo-liberal
17 perspectives on the economy that transcended party political divides and
18 emphasised the role of competition, markets and self-reliance in shaping the fate
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48 The Knowledge-based Economy, version III: New Labour, regional devolution and
49 new science-based industries and knowledge transfer from the region’s
50 Universities
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3 While the election of the New Labour government in 1997 in many ways was
4 marked by continuities with the neo-liberal policies of its Conservative
5 predecessors, in other ways it registered important changes. In the context of
6 policies for the regions in general, and the north east in particular, these changes
7 reflected the convergence of three different sorts of pressures, two 'economic' and
8 the third 'political'. First, there was recognition of a persistent national productivity
9 'gap', especially between the UK and USA, reflecting lower levels of R&D and high
10 level 'knowledge-based' activities. This was linked to policy makers' changing
11 understandings of the determinants of economic growth that placed greater
12 emphasis on the quality of ideas, innovation and knowledge (for example,
13 AGHION and HOWITT, 1998). This influenced national government policy and in
14 turn filtered down to shape emerging conceptions of regional development policy
15 (as is shown below). Secondly, there was recognition of continuing problems of
16 regional uneven development as the north east persistently performed at the
17 bottom of the regional economic performance league tables. This strongly
18 suggested that previous economic development models (in all their varied forms)
19 simply had not had, were not having and would not have their intended effects.
20 Thirdly, there were increased pressures for growing regional devolution in parts of
21 both central government and in some regions. These pressures were particularly
22 prominent in the north east among certain business and political elites (and the
23 reasons for this are discussed further below). The newly elected government saw
24 the possibility of dealing with all three sets of issues simultaneously via new
25 innovative devolved regional organisations in England, Regional Development
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3 Agencies (RDAs: the Celtic fringes had had their own stronger versions of such
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5 institutions for many years).
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10 The RDAs (along with appointed Regional Assemblies) were launched in the
11 context of various national initiatives intended to help resolve the national
12 productivity problem via encouraging knowledge transfer from Universities to
13 regional economies and promoting an entrepreneurial culture in higher education
14 (for example, establishing regional Science Enterprise Centres). This drew heavily
15 on one particular conception of scientific knowledge and its translation into the
16 economy (ETZKOWITZ and LEYDESDORFF, 2000; LUNDVALL and MASKELL,
17 2000) and was a process that was to be heavily influenced in the north east by the
18 subsequent involvement of international consultants ADL (see below). Problems of
19 poor regional economic performance were to be solved by, literally, capitalising
20 and capitalising on knowledge produced in the regions' Universities, facilitating the
21 production of more knowledge intensive and higher value added commodities,
22 principally in manufacturing but to a degree in services, reflecting the increasing
23 de-differentiation of manufactures and services. Enhanced economic performance
24 would result from both capitalising upon on-going scientific research in universities
25 and via specifically seeking to shape their research activities and agendas,
26 especially in science and engineering. This potentially raised difficult issues
27 regarding the autonomy of universities and the determinants of research, the
28 production of scientific knowledge and the ownership of IPR arising from that
29 research. Implicit in this approach to economic development policy was a
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3 territorially-based model of knowledge production and dissemination, centred on a
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5 concept of regions as bounded and contiguous territories and regionally-defined
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7 organisational structures and intra-regional flows. Universities in the region
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9 responded to these schemes (DUKE et al, 2006). Individually and collectively,
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11 often in collaboration with other regional partners, they explored ways to
12
13 encourage knowledge transfer to companies and public sector organizations (such
14
15 as the NHS) in the region and commercialise the results of their scientific research.
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18 At the risk of (over) simplification, these may be categorised as falling into one of
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20 four types: research centres, collaboration and consultancy; intellectual property
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22 (IP) transactions; promotion of spin-offs, incubators, science parks; training and
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24 labour mobility.
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32 While these national or UK-wide initiatives evoked specific responses within the
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34 north east, they also created tensions, both nationally and specifically within the
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36 region. The Treasury and Department of Trade and Industry (DTI) were primarily
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38 concerned with productivity and national economic performance, seeking to use
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40 these national initiatives to narrow the gap in productivity levels between the UK
41
42 and its main international competitors and ease the transition to a high productivity,
43
44 new KBE. They saw the prime role of RDAs as the elimination regional productivity
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46 differentials and the barrier that these posed to non-inflationary national economic
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48 growth^{iv}. Not all central Government Departments saw the role of RDAs in this
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50 way, however. The Office of the Deputy Prime Minister (ODPM,) had a much
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52 stronger commitment to regional devolution per se, a cause. Long championed by
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3 the 'Old Labour' Deputy Prime Minister John Prescott, whose 1983 alternative
4 regional strategy was based upon greater regional devolution, regional
5 development agencies and elected regional authorities. As a result, there were
6 visible tensions within national government over the role of the new RDAs between
7 the Treasury/DTI and the ODPM.
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17 Equally within the region there were divisions between those who wanted such
18 devolved Agencies as part of a process of regional democratisation that would –
19 inter alia – allow the formation and implementation of more effective regional
20 development strategies and those who opposed them. These disputes reflected
21 different conceptions of 'the region' as a social actor, differences as to the
22 appropriate site of policy formation, and divergent views as to which social
23 interests should be prioritised in regional development policies. The opposition was
24 something of an unholy alliance, bringing together three distinct factions. Firstly,
25 those who opposed unelected RDAs because they were anti-democratic.
26 Secondly, those who opposed the proposed form of elected RDA because it was
27 simply too weak to be effective (an offer decisively rejected in a regional
28 referendum in 2004). Thirdly, those who opposed an elected RDA because they
29 saw it as disrupting existing and well-established organisational arrangements that
30 originated in the 1930s and subsequently evolved into a succession of
31 organisations 'in and for' the region These organisations were manned (the
32 term is deliberate) by groups drawn from a small political and economic elite and
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3 served their interests and those of their various constituencies (HUDSON, 1989;
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5 2006a; 2006b)^v
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10 However, the establishment of the Regional Development Agency, (ONE), in 1999,
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12 was a significant extension of past policies. Its main task was to forge a regional
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14 economic strategy but within strictly defined parameters as to what constituted the
15
16 economy ('the capitalist mainstream'), what constituted development (increases in
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18 productivity and GDP/caput) and as to the targets that had to be met and the tasks
19
20 that needed to be achieved to ensure this. These constraints were not unique to
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22 ONE, applying to all the English RDAs. However, especially when combined with
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24 the influence of a small set of consultants who tended to be involved in the
25
26 production of these strategies and who were selling essentially the same generic
27
28 model of development to all regions^{vi}, they led to the counter-intuitive result that
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30 their various economic development strategies bore a close generic resemblance
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32 to one another, despite the very different regional contexts that they were
33
34 supposedly addressing. As such, the creation of the RDAs and the ways in which
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36 they were steered and monitored by central government can be seen as one
37
38 expression of a new form of governmentality, of governing 'at a distance',
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40 apparently devolving authority and power to regions but in practice tightening the
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42 grip of the centre over the regions (HUDSON, 2007).
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53 The emergent regional economic strategy in the north east had a clear and explicit
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55 focus on promoting a new sort of KBE - in part a product of a recognition of the
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3 inadequacies of previous forms of policy, in part of a growing international
4 emphasis upon a certain sort of 'knowledge-based economy as the route to future
5 prosperity among international organisations such as the OECD and the EU with
6 its Lisbon agenda. The region's universities were assigned – or, perhaps more
7 precisely, sought for themselves - a key role in this as important regional actors,
8 centres of research excellence and producers and disseminators of knowledge.
9 University laboratories were to become key nodes of 'high level' knowledge
10 production, predominantly in the form of codified knowledge, and its transfer to
11 private sector companies and public sector organisations in the region. While
12 partly a response to pressures from the universities, this was also a realistic
13 reflection of the absence of feasible alternatives to fill this role as key nodes of
14 knowledge production and dissemination. By the late 1990s there was very little
15 private sector R&D activity left in the region and there were no major government
16 or public sector R&D facilities there. The north east regional economic strategy
17 (ONE, 1999; see also 2003) specifically focused on universities as the prime
18 mechanism for rebuilding the knowledge base, identifying 'Placing universities and
19 colleges at the heart of the Region's economy' as one of six main priorities.
20 However, there was no serious consideration of the knowledge transfer process, of
21 the necessary relations between codified and tacit knowledges in this process, and
22 of how new codified knowledge would be used in combination with existing tacit
23 knowledge. Rather it was simply assumed that the production of such knowledge
24 in universities and its (non-problematic) translation into the regional economy as a
25 source of new products, processes and profits would act as a necessary - at times
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it even seemed sufficient – condition to set in motion a virtuous spiral of growth in the region. As a result, putting the region’s universities at the heart of the regional economic strategy in this way was not without risks. From ONE’s point of view it left its economic development strategy – with its strong claim that it would generate 90,000 jobs in the new KBE (whatever that in practice would mean) in ten years – heavily dependent upon universities filling their assigned role in circumstances in which they had little experience of, or track record of success in, such translational activity. From the point of view of the universities, it created a weight of expectation as to their capabilities in knowledge transfer. Whether this was reasonable or realistic remained unclear, not least because successive UK national Innovation Surveys reveal that only 2% of companies regard universities as a highly important source of information (Miles and Daniels, 2007, 9). Nonetheless, in the end, the KBE – or, more precisely, the specific form of its elaboration in ONE’s strategy - came to be seen as a politically neutral leitmotif to which all those in the region who were ‘partners’ in the strategy could sign up (after all, who could be against knowledge?).

This still left unresolved the question of how to translate research from the universities to produce the desired regional KBE. In seeking to answer this question, the production of the regional economic strategy became linked into the debate on ‘clusters’ and the promotion of Porterian clusters as a key element in the process of knowledge transfer and successful regional economic development (although in fact ideas of cluster-based development were being floated in the

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2
3 north east in the 1960s: see HUDSON, 1989). Government White Papers in 2000
4 and 2001 emphasised the role of RDAs and of Universities in underpinning
5 economic vibrancy via support for clusters and innovation (DTI, 2000; DTI/DfEE,
6 2001), uncritically accepting claims that territorial clusters were the best – indeed
7 the only – feasible economic development model and failing to explore alternatives
8 based around different spatialities and forms of inter-firm relationships.
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20 However, the question of which regional organisations could perform the role of
21 broker and translator of knowledge from universities to economy still remained
22 unanswered. The 2001 White Paper proposed establishing University Innovation
23 Centres (UICs). However, in parallel to these and other national initiatives and
24 schemes, ONE set out to create its own set of new regionally-specific intermediate
25 organisations as an integral component in its emerging regional economic
26 strategy. Each English RDA was required to develop an innovation action plan as
27 part of its initial guidance from government, building upon existing innovation
28 strategies developed through the government regional offices, often assisted by
29 funding from EU programmes. However, the resources available to support this
30 were very limited (between £250k and £440k per RDA per annum) while RDAs
31 were highly constrained in their use of central government funds because funding
32 streams were locked into central government programmes delivered in the
33 regions. Furthermore the legacy of historically low levels of government R&D
34 expenditure in the regions was seen as a key obstacle in moving towards a new
35 KBE. As ONE (1999, 59) emphasized, '[t]here is a widespread belief throughout
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3 the Region that the Government must direct more Treasury funded research to
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5 Universities outside London, particularly to the North East. This is essential to
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7 underpin the Region's approach to promoting knowledge transfer'.
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12 One suggested approach to knowledge transfer was via Advanced Centres of
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14 Excellence (or Centres of Discovery), which like the, then new, International
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16 Centre for Life would combine research, exploitation, spin-offs, educational
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18 outreach, training and public understanding of science. Four additional Centres
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20 were proposed, but without specifying technology areas or delivery mechanisms or
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22 locations. To help take forward the debate and clarify the potential role of such
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24 Centres, in early 2001 ADL was commissioned to review the research base in the
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26 North East in relation to current and future needs of key industry clusters. The ADL
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28 Report (August 2001) combined lessons learned from a parallel study in the North
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30 West with refinement of previous work in the North East and provided a clear
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32 template for the region. The response to the report (ONE, 2001) was very rapid –
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34 indeed so rapid that it seems not unreasonable to assume that the response had
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36 already been decided ahead of the report. Submitted to the DTI in September
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38 2001 it incorporated most of ADL's recommendations. The core of the 'Strategy
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40 for Success' was the formation of a Science and Industry Council (established in
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42 December), a regional exploitation agency NStar to provide access to finance,
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44 proof of concept investment and commercialisation advice and assistance and five
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46 'Centres of Excellence', each to be established as non-profit companies and
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48 located in different parts of the region. The five Centres would focus on life
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3 sciences (Centre of Excellence for Life Sciences - CELS), new and renewable
4 energy technologies (New and Renewable Energy Centre – NaREC),
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6 nanotechnology (Centre of Excellence for Nanotechnology, Photonics and
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8 Microsystems - CENAMPS), digital technologies (Codeworks) and process
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10 industries (Centre for Process Industries), this last based on the legacy of ICI's
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12 former R&D activities on Teesside (see CHAPMAN, 2005) – a mixture of
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14 technologies novel to the region and existing regional industrial and academic
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16 strengths. .
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24 These five Centres of Excellence were intended to link the region's universities'
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26 research base – concentrated in Durham University and the University of
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28 Newcastle - to business, forming a bridge between their scientific research and
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30 industrial commercialization and the capitalisation of knowledge produced through
31
32 research, while also recognising the need to forge extra-regional links. ONE
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34 provided pump-priming resources but each Centre was required to plan for self
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36 sufficiency from commercial and investment income within five years. Whether
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38 prioritising short-term concerns with financial self-sufficiency over longer-term
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40 concerns with qualitative regional economic transformation was realistic and
41
42 sensible remains a moot point. Overall it was estimated that the RDA would invest
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44 £200 million over five years while aiming to leverage a similar level of investment
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46 from EU and other national programmes (ONE, 2003). Each Centre evolved a
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48 distinct strategy, reflecting the characteristics of the technologies and sectors it
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50 supported and the legacies of existing Centres and activities. In addition Nstar
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3 sought to invest £33m in innovative technologies through proof of concept funding.
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6 However, in total and in relation to the task of shifting the regional economy onto a
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8 qualitatively different developmental trajectory, this was very modest funding.
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12 Following an appraisal of the Strategy for Success by the Regional Assembly in
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14 summer 2004 as part of its 'scrutiny' role, ONE reviewed the programme,
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16 identifying three Centres as presenting the greatest potential for future economic
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18 growth. Accordingly, the programme was restructured around the three 'pillars' of
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20 Healthcare, Process Industries and Energy and Environment, associated
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22 respectively with CELS, CPI and NaREC. Each pillar was to be directed by a
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24 Leadership Council, responsible for setting a strategic vision and overseeing
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26 delivery of the project, and incorporate industrial clusters and other 'delivery
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28 partners' (including universities). ONE anticipated that each pillar could potentially
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30 contribute £2bn towards closing the North East's perceived £9bn productivity gap.
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32 The remaining two Centres (CENAMPS and Codeworks), along with NStar, the
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34 Northern Way Design Centre (see below) and a management skills programme
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36 provided via the Regional Skills Partnership, were to have more of a generic
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38 underpinning and complementary role, supporting activity across the three sectoral
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40 pillars. Reflecting its aim that the Pillars should become self-financing, ONE
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42 proposed a two tier structure, with their public duty elements of activity financed by
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44 the Agency, and the remaining income generating elements run through a
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46 separate trading arm, responsible for commercialisation.
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3 The emergence in 2004 of the Northern Way growth strategy involved ONE in
4 discussions with two other RDAs (the North West and Yorkshire and Humberside)
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6 around a wider pan-regional strategy for investment in science in collaboration with
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8 eight research-intensive universities in the North, known as the N8. However, the
9
10 scale of additional funding was again modest – a “growth fund” of £100 million over
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12 the period 2005-2008 spread across the three RDAs, with only £10 million targeted
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14 at knowledge transfer and science and innovation priorities (NORTHERN WAY,
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16 2005). Clearly there is limited scope for new initiatives within these budgetary
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18 limits. In addition, Newcastle was one of three cities were designated as science
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20 cities. The RDA, Newcastle City Council and Newcastle University acquired a
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22 development site, ‘science central’, near to the University and intended to be a
23
24 new translational research campus, grounded in a place-bound concept of
25
26 ‘science city’. This, however, generated visible tensions between those who saw
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28 ‘science city’ in this way, eliding it with ‘science central’, and those who envisaged
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30 ‘science city’ as a distributed regional network, encompassing other key nodes of
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32 scientific knowledge production and research, both new (such as NETPark in
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34 County Durham) and more established (such as CPI on Teesside, which merged
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36 with CENAMPS in 2007),
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48 How successful these various initiatives will be in facilitating the emergence of a
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50 new KBE and closing the inter-regional output remains to be seen. There is some
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52 initial evidence of the ‘pillars of excellence’ developing as nodes in knowledge
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54 flows (TULLY et al, 2006) and innovative firms in the north east being more likely
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3 to exploit contacts with Universities as compared to other English regions
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5 (Johnson and Reed, 2008, 24-5) but this is some way from the effective translation
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7 of results from scientific research into the cognitive basis of a 'new' regional KBE.
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9 However, there are continuing uncertainties as to the development of 'science
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11 central' and the time frame in which this might happen and, more generally, it
12
13 remains to be seen how effectively 'science city' as well as the 'pillars of
14
15 excellence' will evolve as mechanisms for delivery of the transition to a new
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17 regional KBE. Moreover, influential analysts have cast doubt on the wisdom of
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19 relying on developing new industries on the basis of new knowledge and novel
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21 technologies, seeing it a high-risk and likely to fail and arguing for a different
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23 strategy that sought to build more upon the legacies of previous versions of the
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25 KBE (OECD, 2006).
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34 Conclusions and Some Questions

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38 By the 1990s it was abundantly clear that the various policies pursued in the north
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40 east had failed to have their intended effects, of producing a stronger, more
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42 diversified and resilient regional economy. The region continued to bump along at
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44 the bottom of league tables of regional economic performance, with persistent high
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46 levels of multiple deprivation and sharp intra-regional socio-spatial disparities in
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48 well-being. This encouraged – some might say politically necessitated – an urgent
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50 search for fresh policy approaches. Clearly the policy initiatives at both national
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52 and regional levels since the late 1990s, heavily influenced by new claims as to the
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3 significance of knowledge of particular sorts in shaping success in the
4 contemporary economy, represent an ambitious attempt to remedy the situation
5 and shift the region's economy onto a qualitatively different developmental
6 trajectory, seeking both to position the region more advantageously in relation to
7 the (allegedly) emergent 'new' economy while echoing its nineteenth century
8 'golden age' but on the basis of a much more consciously managed process of
9 knowledge production and translation. The aim is to facilitate the production of new
10 commodities, with unique selling points and dominant market positions, and/or to
11 enhance the knowledge intensity and move up the value chain in producing
12 existing commodities via capitalising (on) knowledge produced in the region's
13 universities and translated through new intermediary organisations, the
14 Centres/Pillars of Excellence.
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34 The success or otherwise of these initiatives raises important questions. First, are
35 they working – or will they work in future – in their own terms, to meet their defined
36 goals? The answer to these questions remains as yet uncertain. Not least, this is
37 because knowledge, no matter how original and novel, remains only one
38 determinant of successful commodity production, corporate profitability and
39 successful regional regeneration and too much weight may be being loaded onto
40 knowledge per se as an agent of economic transformation. While there have been
41 some promising signs, it is by no means certain that this developmental strategy
42 will succeed. It is, for example, difficult to see that it will meet the target of 90,000
43 jobs to be created in the new KBE and questions remain as to whether the region's
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3 universities will be able to perform the key role of nodes of research, knowledge
4 production and dissemination assigned to them. There will undoubtedly be
5 knowledge transfer from the universities but it remains to be seen whether this will
6 be on the scale required to transform the regional economy – not least because of
7 lack of demand and the limited capacity of the region's economy to absorb such
8 new knowledge and associated innovations. Moreover, there are unresolved
9 tensions between the production of scientific knowledge as a research goal per se
10 – which may then open opportunities for commercial exploitation, or then again
11 may not - and the consumption of such knowledge production to the pressing
12 imperatives of capital. In short, it remains an open question as to whether the
13 current round of policies in the north east will have their intended effects in
14 facilitating the emergence of a KBE, especially as they are based in a limited and
15 partial – even naïve – view of the knowledge transfer process (see also OECD,
16 2006). For as Miles and Daniels (2007, 21) note, “Increasingly it is not individual
17 companies that compete but trans-border supply chains of integrated companies
18 positioned in global markets. In the face of such massive unbundling’, whither a
19 national innovation strategy (let alone a regional strategy)?” This clearly calls into
20 question the efficacy of territorially- bounded innovation strategies.
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47 Secondly, the region is seeking to pursue these policies in an increasingly
48 competitive global environment, as cities, regions and national states all compete
49 for investment. Many places that have gone through the same sequence of growth
50 and decline as north east England are now seeking to develop knowledge-based
51 economies, centered on the same restricted set of high technology activities and
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3 sectors. The pursuit of science-based – even science led - investment in sectors
4 such as biotechnologies and nanotechnologies is rife. However, these are also
5 broad and diverse sectors of activity. One implication of this is that “the way
6 forward is to nurture ‘niche positions’” (Miles and Daniels, 2007, 4). Consequently
7 there is a need to identify precise niches and spheres of activity in which
8 companies in north east England could, in principle at least, develop first mover
9 advantage and significant competitive advantage and then to develop equally
10 precisely targeted strategies to support their further successful development.
11 There are one or two of initiatives that suggest developments along these lines.
12 The first is the North East Stem Cell Institute (NESCI) is a unique interdisciplinary
13 collaboration between Durham and Newcastle Universities, the Newcastle
14 Hospitals NHS Foundation Trust, the International Centre for Life in Newcastle and
15 ONE NorthEast. It seeks to underpin cutting-edge research in stem cell biology
16 and translate the results of this research into cost effective and ethically robust
17 health solutions to ameliorate degenerative diseases, the effects of ageing and
18 serious injury. This in turn will provide a potential basis for commercialising the
19 results of research and provide the basis for the emergence of innovative new
20 products and services in which firms in the region will have first-mover
21 advantage^{vii}. A second example is the Plastics Electronics Technology Centre
22 (PETeC) at the North East Technology Park (NETPark) in County Durham.
23 Following its merger with CENAMPS in 2007 and working in collaboration with
24 multinationals and leading research bases, and both drawing on and facilitating
25 cutting-edge research in the region’s Universities, the Centre for Process
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3 Innovation (CPI) is establishing PETeC as an internationally recognised facility for
4 the development and commercialisation of printed electronic devices and flexible
5 functional materials. Plastic electronics will form the basis for a completely new
6 range of applications across a broad set of markets including electronic
7 consumer goods, automotive, aerospace, energy, retailing, food packaging,
8 imaging, healthcare and fashion. Potential applications include smart packaging,
9 real-time newspapers, intelligent signage, point-of-care medical diagnostic
10 devices, novel drug delivery devices, smart sportswear, fashion clothes and
11 accessories, printed electronics for consumer products, flexible solar cells and
12 solid state lighting. Providing world-class facilities, services and expertise at the
13 hub of a UK-wide network in plastic electronics, PETeC is becoming the national
14 prototyping operation for these emergent new materials. It will establish the
15 region as a global leader in the application of plastic electronics and will enable
16 the development of internationally competitive, knowledge intensive activities,
17 with the potential for both new and established firms in the north east to derive
18 first-mover advantage in these innovative new materials and products
19 manufactured from them.
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45 However, this degree of sophisticated targeting has not, as yet, developed more
46 generally; nor have its wider implications been thought through in a systematic
47 way. For example, it could have important implications for the types of university
48 research that would be supported – and for those that would not be, with potential
49 longer-term dangers of narrowing the gene pool in terms of the diversity of
50 research in universities. Moreover, even if there was to be this degree of
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3 sophisticated targeting, it is important to remember that these policy-led attempts
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6 to both use the results of existing university research in regional innovation
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8 strategies and indeed shape such research in future so that it is directly linked to
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10 the needs of capital are constrained within the parameters and limits defined by
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12 capitalist relations of production. Consequently, there are precise limits to such
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14 processes, circumscribed by the limits to capital itself (HARVEY, 1982; JESSOP,
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16 2000) and by the limits to political strategies that seek to influence the form of
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18 capitalist development, which remains inherently and unavoidably uneven.
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20 Seeking to commodify existing knowledge and/or to produce future knowledge in
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22 commodity form cannot escape the contradictions inherent to processes of
23
24 capitalist development and commodity production. Two are of particular relevance
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26 here: first, such development typically has unintended as well as – or instead of –
27
28 intended results; secondly, such development is dynamically uneven and typically
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30 erodes the bases of its success over the longer-term. This is something that
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32 proponents of approaches that prioritise knowledge, information flows and learning
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34 per se are prone to ignore.
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44 Thirdly, however, if the strategy does succeed in facilitating the emergence of a
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46 new KBE that, for a while, is both quantitatively and qualitatively significant in its
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48 transformative effects on the regional economy, there are two qualifications to be
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50 borne in mind. The first is that the historical-geography of the north east economy
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52 suggests that even when there was substantial indigenous R&D activity in the
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54 region, this was no guarantee of continued long-term economic success in/of the
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3 region. Profits made in the region were invested elsewhere, in other places and
4 sectors (for example, railways in south America and banks in London). As the
5 miners' checkweighman George Harvey put it in 1917, "capital knows no county";
6 no doubt if he were to come back now, he would emphasise that capital knows no
7 country, indeed no continent. The second qualification is that even a successful
8 KBE as envisaged within current policy discourse regionally and nationally would
9 fail to engage large numbers of people in the region, for two reasons: first, it would
10 generate insufficient jobs relative to the number of people seeking work; second,
11 there would be great selectivity on the part of employers as to who would get those
12 jobs. This strongly suggests the need for a more plural and heterogeneous
13 conception of the economy, of development and of relevant knowledges in the
14 context of a regional development strategy in the north east (and like regions).
15 These are essentially theoretical tasks but the key issue is not so much re-
16 theorisations per se (vital though that is) but rather which theoretical conceptions
17 become dominant – even hegemonic – in policy discourse and practice and in
18 politics. Most fundamentally, there needs to be acceptance of a broader
19 conception of the KBE to encompass a wider range of activities and valorise a
20 greater range of knowledges. There is a pressing need to recognise that all forms
21 of economic activity are knowledge-based and to embrace a more heterodox and
22 plural concept of the economy, to acknowledge that there is – of necessity – still a
23 place for the branch plant economy alongside an emergent more sophisticated
24 'knowledge based' economy. More than that, however, it is vital to acknowledge
25 the presence of a social economy and an informal economy that will be crucial to
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3 any sustainable development strategy for the north east since the scale of
4 employment creation in the formal economy, whether in its branch plant or
5 'knowledge-based' variants, will simply be insufficient to absorb all those seeking
6 work in the region. There is some evidence of growing recognition of such points in
7 ONE's evolving approach to its regional development strategy although it remains
8 uncertain as to how much weight will in practice be attached to such concerns.
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20 Finally, although the empirical focus in this paper has been upon the experiences
21 of one region, north east England, this raises broader questions as to how different
22 regions relate to and are positioned in the inherently uneven process of capitalist
23 development and the changing knowledge bases and requirements of its leading
24 edges. For however much the emphasis switches to the significance of flows of
25 knowledge in cyberspace as underpinning economic success and a resulting
26 migration of capital into cyberspace, like all capital "it still depends on
27 territorialisation" (JESSOP, 2000, 4) – that is, on materialisation in specific cities
28 and regions, which compete to be the sites of such materialisation and
29 territorialisation. Thus many other regions with economic histories similar to that of
30 north east England are pursuing similar policies to create new knowledge based
31 economies – all believing that this will enable them to shift onto the high road of
32 economic success, emulate the processes of self-reinforcing endogenous growth
33 present in the key nodes of the global economy, and break with their peripheral
34 status. Put another way, the assumption is that all regions will be able to engage in
35 'win-win' scenarios. Some may indeed succeed in making this transition. However,
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3 as the history of north east England shows only too clearly, this is a far from easy
4 task. Moreover, it is difficult to see how all can be winners in a capitalist economy
5 that continues necessarily to be characterised by combined and uneven
6 development. There are therefore clear limits to the new knowledge based
7 economy – as there were with previous generations of regional policies - in
8 addressing issues of uneven development.
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Acknowledgements

This paper is a revised version of one first given at the AAG 2006 Annual Conference in Chicago and draws on research into the transformation of the economy of north east England, and of development policies in and/or for the region, over a period of some 30 years. However, the account of the period since 1997 draws heavily on the results of a research project on knowledge transfer in the region funded by the Cambridge-MIT Initiative and I am particularly grateful to my two co-researchers on this project, Brian Tanner and Janet Tully. Ash Amin also very helpfully commented on an earlier draft, as did Helen Lawton-Smith, several participants at the Chicago conference and two anonymous referees. I have endeavoured to respond to their varied helpful comments and constructive criticisms. However, the responsibility for the end product is mine – the usual disclaimers therefore apply.

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Notes:

ⁱ Two qualifications are worth making regarding the growth process. First, there were often wild cyclical fluctuations around the upward trend. Secondly, the main beneficiaries of growth were local capitalists and their allies; working people and their families were commonly living in poverty, especially in cyclical downturns.

ⁱⁱ There was no inevitability about this, however. In other similar regions such transformations took place on a much larger scale. For example, in the Ruhr there a significant new cluster of environmental technology companies emerged from the declining coal and steel sectors.

ⁱⁱⁱ State training schemes were by no means new. Local technical colleges (and later polytechnics) provided courses for engineers and skilled manual workers required by the 'old' industries. Training courses were organised in response to the requirements of earlier rounds of branch plant investment - for instance in consumer electronics in the 1960s (HUDSON, 1980). However, then, the probabilities of acquiring employment requiring these newly-acquired skills were much higher.

^{iv} Those with a sense of history – and irony – pointed out that this was precisely the argument used in the 1950s by Macmillan's Conservative government to justify introducing a revived and strengthened central government regional policy and soon afterwards specific initiatives for the north east of England: HUDSON, 1989.

^v They included the Northern Economic Planning Council set up in 1966, the Government Office for the North East (GONE), established in 1993 to bring together central government activities and operations and the delivery of central government policies in the region within a more coherent framework and the appointed Regional Assembly created in 1999.

^{vi} There are strong echoes here of THRIFT's (2005) emphasis on the significance of the global "circuit of cultural capital" and of the pervasive influence of a small set of consultants and their associates.

^{vii} For further information, see <http://www.ncl.ac.uk/corporate-web-development/about/item/nesci>