

The Learning Region: Institutions, Innovation and Regional Renewal

KEVIN MORGAN

Department of City and Regional Planning, University of Wales Cardiff, PO Box 906, Cardiff CF1 3YN, UK

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MORGAN K. (1997) The learning region: institutions, innovation and regional renewal, *Reg. Studies* 31, 491–503. A potentially significant theoretical convergence is underway between the two hitherto distinct fields of innovation studies and economic geography. Through the prism of the 'learning region' this paper examines some of the theoretical and policy implications of this convergence. Drawing on the work of evolutionary political economy, it highlights the significance for regional development of the interactive model of innovation. The paper then proceeds to examine the policy implication of this model by focusing, first, on a new generation of EU regional policy measures and, second, on a case study of regional innovation strategy in Wales. Finally, the paper offers a critical assessment of the distributional consequences of this strategy, posing the question: is regional innovation policy enough to address the socio-economic problems of old industrial regions?

Innovation Learning Evolutionary political economy Old industrial areas Wales

MORGAN K. (1997) La région d'apprentissage: les institutions, l'innovation et la reprise régionale, *Reg. Studies* 31, 491–503. Une convergence théorique potentiellement importante est en cours entre les deux domaines des études d'innovation et de la géographie économique qui sont restés jusqu'ici distincts. A partir de la notion d'une 'région d'apprentissage', cet article cherche à examiner quelques-unes des retombées théoriques et de politique. Puisant dans le travail de l'économie politique évolutionniste, il souligne l'importance du modèle d'innovation interactif pour l'aménagement du territoire. Il s'ensuit un examen des retombées de politique de ce modèle, portant primo sur une nouvelle génération de mesures de politique régionale au sein de l'UE, et secundo sur un cas d'étude de la stratégie régionale en faveur de l'innovation aux Pays de Galles. Pour conclure, l'article fait le bilan des impacts distributionnels de cette stratégie, tout en posant la question suivante: la politique régionale en faveur de l'innovation, est-ce qu'elle suffit pour affronter les problèmes socio-économiques des régions industrielles traditionnelles?

Innovation Apprentissage
Economie politique évolutionniste
Zones industrielles traditionnelles Pays de Galles

MORGAN K. (1997) Die lernende Region: Institutionen, Innovation und regionale Erneuerung, *Reg. Studies* 31, 491–503. Zwischen den beiden bisher klar von einander abgegrenzten Gebieten der Wirtschaftsgeographie und des Studiums von Innovationen bahnt sich eine potentiell bedeutende theoretische Konvergenz an. Mit Hilfe des Prismas der 'lernenden Region' untersucht der vorliegende Aufsatz einige der theoretischen und prinzipiellen Implikationen dieser Konvergenz. Gestützt auf die Arbeiten des sich langsam entwickelnden, politisch bestimmten Wirtschaftswesens beobachtet er die Bedeutung für die Regionalentwicklung des interaktiven Innovationsmodells. Der Aufsatz untersucht sodann die prinzipiellen Implikationen dieses Modells, indem er sich zuerst auf eine neue Generation der EU Maßnahmen für Regionalpolitik, und dann auf eine Fallstudie der regionalen Innovationsstrategien in Wales konzentriert. Abschließend bringt der Aufsatz eine kritische Beurteilung der Folgeerscheinungen dieser Strategie bezüglich Distribution, wobei die Frage auftaucht, ob regionale Innovationspolitik zur Inangriffnahme der sozio-ökonomischen Probleme der alten Industriegebiete ausreicht.

Innovation Lernen
Sich langsam entwickelndes, politisch bestimmtes
Wirtschaftswesen
Alte Industriegebiete Wales

INTRODUCTION

As we prepare to enter a new millennium the classical paradigms of social and economic development seem to have exhausted themselves. The paradigms of the Left, ranging from neo-Keynesian to Marxist, are impaired by an exaggerated and naive faith in the capacity of the state. Less credible still is the neo-liberal

paradigm of the Right, whose adherents are unable or unwilling to recognize the shortcomings of the market as a mechanism for promoting economic development and social welfare. For all their differences the classical paradigms are afflicted by dualisms – state versus market, public versus private, etc. – which need to be transcended rather than affirmed in a one-sided fashion. In contrast some of the more eclectic 'third wave'

conceptions of development consciously try to eschew such binary thinking so as to open up to inquiry regional processes and intermediate institutions that were marginalized by the inordinate attention devoted to 'state' and 'market'.

Over the past few years in particular we have witnessed the spread of a new paradigm, variously referred to as the *network* or *associational* paradigm. Whatever the shortcomings of this new paradigm, it is clearly fuelled by the pervasive belief that 'markets' and 'hierarchies' do not exhaust the menu of organizational forms for mobilizing resources for innovation and economic development (ILLERIS and JAKOBSEN, 1990; POWELL, 1990; CAMAGNI, 1991; OECD, 1992; LUNDVALL, 1992; COOKE and MORGAN, 1993; GRABHER, 1993; SABEL, 1994; STORPER, 1995; AMIN and THRIFT, 1995). A new, more sceptical conceptual landscape is beginning to emerge, and this may be no bad thing if we are to make sense of, and engage with, the complex and sometimes bewildering changes that are underway in economy, society and polity in the world today. A new century may be upon us, but some of the challenges ahead are already clear. Indeed some of them have a depressingly familiar ring to them, like mass unemployment, environmental degradation, uneven economic development, social polarization and shallow democracy.

For the European Union one of the key institutional challenges will be to manage the twin processes of widening and deepening, a tension which could eventually wreck the Union unless the principle of subsidiarity is given more practical expression. In developmental terms another challenge will be to overcome the knowledge transfer problem. Relative to Japan and the US, for example, the EU has a poor record of converting scientific and technological knowledge into commercially successful products and services, that is an inability to transfer knowledge from laboratory to industry and from firm to firm (COMMISSION OF THE EUROPEAN COMMUNITIES (CEC), 1993). At bottom the EU lacks a robust networking culture, that is the disposition to collaborate to achieve mutually beneficial ends. Although there are regional exceptions to this rule, the fact remains that in aggregate terms much more needs to be done to promote interorganizational flows of information and knowledge. One of the underlying arguments here is that this problem might be addressed most effectively at the regional level, providing regional policy is conceived as a dimension of innovation policy rather than just a social welfare measure.

The main aim of this paper is to try to connect some of the concepts of the network paradigm – like interactive innovation and social capital – to the problems of regional development in Europe. In an attempt to 'earth' these concepts the paper presents two concrete case studies of new departures in policy and practice. The first is the European Commission's new

programme of Regional Technology Plans (RTPs), which tries to give practical expression to the network paradigm.¹ The second examines the role of the Welsh Development Agency as an *animateur* of innovation in Wales.

INSTITUTIONS, INNOVATION AND THE LEARNING ECONOMY

Over the past two decades, innovation – understood in the broad sense to include product, process and organizational innovation in the firm as well as social and institutional innovation at the level of an industry, region and nation – has assumed an ever more central role in theories of economic development. Whatever the limitations of their work, Marx and Schumpeter were pioneers for their time in recognizing that innovation was the premier source of competitive advantage in capitalist economies, a force that could exert devastating effects, socially and economically, on traditional centres of production. Who can ever forget the poignant passage in *Capital* devoted to the battle between hand-weaving and new power-weaving technology, a battle in which the bones of cotton-weavers ended up 'bleaching the plains of India' (MARX, 1976).

Schumpeter, too, was alive to the revolutionary potential of innovation, or what he called 'quality competition' as opposed to 'ordinary competition' (i.e. price competition). In this conception, innovation was the driving force of economic development and it assumed a number of forms, like 'the new commodity, the new technology, the new source of supply, the new type of organisation' etc. This kind of 'quality competition', he argued, 'strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives' (SCHUMPETER, 1943). The key agents of the innovation process changed over time in Schumpeter's conception: initially he had admired the individual as 'heroic' entrepreneur; later, he resigned himself to the fact that the process of innovation had become *routinized* in the form of the R&D department, one of the key organizational innovations of the twentieth century (FREEMAN *et al.*, 1982).

While Schumpeter did not have what we might call a 'theory of innovation', a new school of economic theory has developed over the past few years which has tried to build on some of his key insights: that capitalism is an *evolutionary* process driven by technical and organizational innovation; a process in which firms face a greater degree of *uncertainty* and *instability* than is ever admitted in neo-classical theory; a process in which social *institutions* other than the market play a major role. Sometimes referred to as 'neo-Schumpeterian', this school of evolutionary economic theory has done much to advance our understanding of innovation and technological change (DOSI *et al.*, 1988; FREEMAN, 1994). Equally significant, it has also opened up some

rich seams of inquiry for the cognate fields of industrial organization, economic sociology, regional studies and science and technology policy.

In this section I want to highlight two propositions which are normally associated with (but not exclusive to) this evolutionary school and then try to connect these to some new theoretical departures in the field of regional development.

Let us begin with the first proposition, namely that *innovation is an interactive process*. While this may seem a rather banal proposition, it is only over the past decade that it has begun to be treated seriously in economic theory and corporate practice. It arose from a critique of the *linear* model of innovation, in which innovation was thought to proceed sequentially from research to marketing as a result either of technology-push or market-pull pressures. There are a number of fatal weaknesses in this model, not least the absence of any feedback loops and the unwarranted disdain for certain kinds of knowledge. The absence of feedback loops meant that 'upstream' activities like R&D, for example, would have little or no opportunity for learning about their effects on user communities (i.e. customers), a recipe for disaster. The second weakness, which is still prevalent in the west today, stems from an elitist conception of knowledge in which scientific knowledge is extolled, while 'lower' forms of knowledge (like engineering and production know-how) are undervalued (ROSENBERG, 1976). There is now growing support for the view that innovation is an interactive process – between firms and the basic science infrastructure, between the different functions within the firm, between producers and users at the interfirm level and between firms and the wider institutional *milieu* – and that this process should be conceived as a process of *interactive learning* in which a wide array of institutional mechanisms can play a role (LUNDVALL, 1992; OECD, 1992).

The second proposition should be read in conjunction with the first, namely that *innovation is shaped by a variety of institutional routines and social conventions*. In recent years no one can fail to have noticed the growing interest within economics in the role and nature of social institutions, a welcome, if belated, reaction to the under-socialized conceptions of neoclassical economics (HODGSON, 1988, 1993). At the most abstract level the concept of an 'institution' in this literature refers to recurrent patterns of behaviour – habits, conventions and routines. For many of these writers the most elemental form of a business institution is a production routine, that is 'a habitual pattern of behaviour embodying knowledge that is often tacit and skill-like' (LANGLOIS and ROBERTSON, 1995). Conventions and routines may help to regulate economic life, by reducing uncertainty for example, but, being cultural artifacts, they are anything but uniform in character. Take trust, for example. In purely economic terms trust is an extremely valuable resource, not least because 'it

saves a lot of trouble to have a fair degree of reliance on other people's word' (ARROW, 1974). But, as Arrow and others have argued, one cannot buy trust. Rather, trust has to be earned in and through repeated transactions. The significance of routines and conventions for innovation and economic development generally is summarized in the concept of *social capital*, which can be defined in the following way:

By analogy with notions of physical capital and human capital – tools and training that enhance individual productivity – social capital refers to features of social organisation, such as networks, norms and trust, that facilitate coordination and cooperation for mutual benefit. Social capital enhances the benefits of investment in physical and human capital and is coming to be seen as a vital ingredient in economic development around the world (PUTNAM, 1993).

Taken together, these two propositions have helped to stimulate an interesting, and highly significant, debate about the nature of capitalism as a *learning economy*. This debate owes a great deal to the Aalborg group of economists in Denmark and in particular to the work of Bengt-Ake Lundvall, one of its leading theorists. Because there is no space to do justice to this work here, suffice it to say that one of the key arguments of this school is that contemporary capitalism has arrived at the point 'where knowledge is the most strategic resource and learning the most important process' (LUNDVALL, 1994). Because of the accelerating pace of innovation, Lundvall argues that know-how has become the key resource for firms to stay abreast of product and process innovation. Like trust, however, know-how cannot be entirely reduced to the status of a commodity because:

Parts of the know-how can be sold as patents and other parts as turn-key plants, but important parts remain tacit and cannot be removed from its human and social context. Therefore the labour market is the most important market for know-how and ... important elements of tacit knowledge are collective rather than individual (*ibid.*).

These ideas resonate with the growing theoretical literature on the role of organizational innovation in the Japanese firm and, in particular, with the concept of the 'knowledge-creating company'. For example, some Japanese authors have argued that Japanese firms have a very different understanding of knowledge to that which prevails in the West. The argument here is that Japanese firms view formal, codified knowledge as merely the tip of the iceberg, because knowledge is felt to be primarily *tacit*, and tacit knowledge is highly personal, hence it is not easily codified and communicated. In the more extreme interpretations it is felt that 'the most precious knowledge can neither be taught nor passed on' (NONAKA and TAKEUCHI, 1994).

These arguments concerning know-how and tacit knowledge are part and parcel of a wider argument about the role of intangible or invisible factors in

economic development (DOERINGER and TERKLA, 1990; FREEMAN, 1994). While there may be a growing disposition to accept the significance of such intangible assets – such as knowledge, competence, skill, organizational culture – these assets seem to defy precise measurement, a problem that continues to bedevil all forms of economic theory (WINTER, 1987). Fortunately, we do not have to resign ourselves to cultural relativism because, patently, some organizational forms and social conventions are more conducive to fostering innovation and learning than others. Let us look at three examples drawn from different levels of aggregation.

At the *national* level there is a growing body of work on national innovation systems which suggests that the level of expenditure on science and technology, for example, is only one of the criteria for assessing the capacity of different national systems because the same inputs are often associated with very different outcomes. Equally important is the stock of social capital, which can, where it is well-developed, facilitate collaboration between firms and the science base or between finance and industry, for example. In addition to the mainline institutions of the world of science and technology (for example, firms, universities, technical institutes) we should not forget the wide array of intermediate institutions (like trade associations, chambers of industry and the professional associations of engineers) which can function as learning laboratories for their respective firms and industries. This seems to be the case in Germany and Japan, where these intermediary organizations are strong, in contrast to the UK, where they are weak (LUNDVALL, 1992; NELSON, 1993).

At the *interfirm* level we know enough about the integrated supply chain systems of the leading Japanese firms to know that they delivered vastly superior results relative to the arm's length buyer–supplier relations which were, and possibly still are, typical in the West. The sweat-shop thesis about Japanese sub-contractors cannot explain how these firms have enhanced their own innovative capacity over the past 30 years or so. The key feature of these integrated supply chains, from the leading customer down through a number of tiered suppliers, is their problem-solving capacity. Through a whole series of institutional innovations – like resident engineers based in the customer's plant, who were thus well-placed to feed back information on the use of their products; supplier associations which disseminated 'best practice' among their members; and jointly agreed conventions to share the profits of interfirm collaboration – the leading Japanese firms were able to reap the benefits of an awesomely effective system of interactive learning. While the leading (customer) firms clearly gain most, the most authoritative study of the Japanese subcontracting system insists that 'both purchasers and suppliers benefited from the synergistic effects that accrued from joint problem solving and continuous improvement in price, product quality, delivery, design

and engineering' (NISHIGUCHI, 1994). It is also worth saying that this system of collaborative manufacturing is not so culturally-embedded (as was once claimed) that it cannot work elsewhere, as we shall see later.

At the level of the *firm* there is widespread agreement that the innovative firm has a number of key features: among other things it has thick *horizontal* information flows between its R&D, manufacturing and marketing divisions; it sets a high premium on what we might call decentralized learning procedures and its routines are such that it is receptive to multiple channels of information, especially from customers, suppliers and competitors on the external side and, internally, from employees. Within the firm one of the key assets is the intangible asset of a workforce which feels a sense of 'belonging' to the firm. Where this exists, and where workers feel that they are not innovating themselves out of a job if they come up with creative solutions, we can say that this is a firm-specific asset that is difficult for competitors to emulate. All the evidence suggests that *kaizen*, the process of continuous improvement through interactive learning and problem-solving, a process that was pioneered by Japanese firms, presupposes a workforce that feels actively committed to the firm. It is in this social context that we should understand two of the key practices of the Japanese firm as an innovative institution, namely the practice of using the factory as a laboratory and the practice of decentralized learning (FREEMAN, 1988; SABEL, 1994).

All of this might seem far removed from the study of regional development. But in recent years there has been a growing convergence between students of economic geography and students of innovation; the former are becoming more interested in innovation capacity as a way of explaining uneven regional development, while the latter are no longer so impervious to spatial considerations in their work on technological change. Within economic geography a number of tentative efforts have been made to utilize some of the insights of evolutionary economic theory, especially with respect to learning, innovation and the role of institutions in regional development (COOKE and MORGAN, 1990, 1994; CAMAGNI, 1991; AMIN and THRIFT, 1995; MASKELL and MALMBERG, 1997). But the fullest and most sophisticated attempt to marry the two disciplines is to be found in the recent work of Michael Storper (STORPER, 1992, 1994, 1995). Since it is not possible to do justice to the nuances of Storper's argument here let me focus on one of the key issues.

Storper seeks to explain what he considers to be 'the principal dilemma' of contemporary economic geography: the resurgence of regional economies at a time when the forces of globalization (in transport, telematics and organizational techniques, for example) appear to have reduced the world to a 'placeless' mass. A key part of the explanation, he argues, is the

disassociation between organizational and technological learning within agglomeration, which has two roots. The first concerns localized input–output relations, or traded interdependencies, which constitute webs of user–producer relations essential to information exchange. The second, and more important, factor concerns the role of *untraded* interdependencies (like labour markets, regional conventions, norms and values, public or semi-public institutions) which attach to the process of economic and organizational learning and co-ordination:

Where these input–output relations or untraded interdependencies are localized, and this is quite frequent in cases of technological or organizational dynamism, then we can say that the region is a key, necessary element in the ‘supply architecture’ for learning and innovation. It can now be seen that theoretical predictions that globalization means the end to economies of proximity have been exaggerated by many analysts because they have deduced them only from input–output analysis (STORPER, 1995).

On the basis of such reasoning Storper argues that the region has assumed a central theoretical status in the process of capitalist development and that (a part of) the explanation lies in its *untraded interdependencies*. This is an important development of Lundvall’s argument that *tacit* knowledge is collective in nature and, because it is wedded to its human and social context, it is more territorially-specific than is generally thought.

Storper’s argument that regions (or, more accurately, that core regions) occupy such a pivotal role in the ‘supply architecture’ of the learning economy may seem provocative to the globalist school of thinking, which tends to the view that global forces, especially multinationals, are somehow impervious to spatial considerations. But we are now beginning to appreciate that globalization and localization, far from being mutually exclusive processes, are actually much more interwoven than is generally acknowledged because foreign direct investment is often attracted to, and has a reinforcing effect upon, ‘innovation clusters’ in the targeted country (STORPER, 1992; DE VET, 1993).

Other authors argue that the globalization process has been exaggerated because the technological activities of the world’s largest firms remain overwhelmingly concentrated in their home country. Why is this? Mainly because ‘physical proximity facilitates the integration of multidisciplinary knowledge that is tacit and therefore “person-embodied” rather than “information-embodied” and it also facilitates the rapid decision-making needed to cope with uncertainty’ (PATEL and PAVITT, 1991). Furthermore, since multinationals tend to tap into local fields of expertise for their technology intensive activities, ‘globalization and national specialization are complementary parts of a common process’ (CANTWELL, 1995).

In the literature on foreign direct investment it is

quite common to find that multinational firms are beginning to increase their R&D investments abroad and that these facilities are akin to ‘listening posts’, which is one way of tapping into foreign sources of learning and innovation. What is less common is to find that multinational firms can actually learn a great deal from their branch plants. These facilities are often engaged in more routine activities and, as such, they are perceived to be working with what ROSENBERG, 1976, called ‘grubby and pedestrian forms of knowledge’. But, as Rosenberg argues, while these forms of knowledge – engineering production and the like – often play a ‘disconcertingly large role’ in learning and innovation, they tend to be ignored by scholars and managers in the West.

We owe a debt to Erica Schoenberger for reminding us that learning, knowledge-acquisition and other transformative impulses flow in more than one direction, that they should *not* be seen as flowing in just one direction, from centre to periphery, from top to bottom, even if this is the dominant direction. In a series of corporate case studies she shows that large firms were imperilled by failing to appreciate that local innovations in their far-flung branches carried important lessons for the firm as a whole. As a result she rightly questions whether the branch plant should be treated as ‘the passive creature of the centre’ (SCHOENBERGER, 1994). To the extent that branch plants are allowed to treat the factory as a laboratory, or to interact with sophisticated users, they may constitute an important laboratory for knowledge acquisition and the headquarters will ignore this at its peril.

These points about the potential learning capacity of branch plants need to be made because the main thrust of Storper’s argument concerns the resilience of technology-intensive regional agglomerations, the ‘motor’ regions which are in the vanguard of learning and innovation. It is not difficult to accept that these robust regions enjoy strong ‘untraded interdependencies’, that their core activities, being sensitive to pockets of tacit knowledge, are not as locationally mobile as the less strategic investments that abound in other, more peripheral regions. Here we come to one of the most difficult and challenging questions in economic development, namely to what extent, if at all, can peripheral regions innovate?

INNOVATION AND LEARNING IN LESS FAVOURED REGIONS: THE RTP EXERCISE

The broad contours of interregional inequalities in Europe are familiar enough, and the gap between the richest and poorest regions remains stubbornly large. As regards income per head, for example, the gap between the top 25 and bottom 25 regions was relatively unchanged between 1983–93. On the unemployment front the 25 worst-affected regions had

an unemployment rate averaging 22.4% in 1995, nearly five times the average for the 25 least-affected regions (EUROPEAN COMMISSION, 1996).

But low income per head and high unemployment are symptoms, the tip of the proverbial iceberg. Underlying these symptoms is a poor developmental capacity, which is a shorthand way to signal the relative absence of physical infrastructure (road, rail, telecommunications), qualified labour and research and technological development (RTD) activity, etc. But in addition to these conventional weaknesses we might add that less favoured regions (LFRs) seem to have little or no social capital on which they can draw, a point which turns the spotlight on factors such as the institutional capacity of the region, the calibre of the political establishment, the disposition to seek joint solutions to common problems. These factors – the invisible factors in economic development – are just as important as physical capital (DOERINGER and TERKLA, 1990; OECD, 1993).

The fact that EU regional policy is mainly addressed to fighting symptoms (like high unemployment) rather than causes (like low innovation potential) has caused concern for many years. Critics have rightly pointed to the fact that innovation support (in the shape of the EU Framework Programme) has been overwhelmingly directed towards existing centres of excellence, which are invariably to be found in the prosperous regions and more specifically in the so called 'islands of innovation', namely Greater London, Rotterdam/Amsterdam, Ile de France, Frankfurt, Stuttgart, Munich, Lyon/Grenoble, Turin and Milan. By default rather than design, the Framework Programme serves to reproduce the gap between poor and prosperous regions (MORGAN, 1992).

To its credit the Regional Policy Directorate General (DG XVI) has fought long and hard with DGs XII and XIII to establish the principle that there ought to be closer integration of the Structural and Framework Funds. More concerned with the external threat from Japan and the US, DGs XII and XIII are understandably keen to distribute innovation support to existing centres of excellence, a principle they do not wish to see diluted by the diversion of Framework Funds to what they see as inferior centres in less favoured regions. Fortunately, there are signs – as in the RTP exercise, for example – that the DGs are now beginning to cooperate to a much greater extent than hitherto in the cause of promoting innovation in peripheral regions.

Generally speaking, the Structural Funds have not been utilized to promote RTD capacity, although the commitment to this field of activity varies widely even among less favoured regions themselves. Between 1989–93, for example, Objective 1 regions as a whole devoted just 2.7% of their Structural Funds budget to RTD-related activities, whereas the more developed Objective 2 regions devoted 9.3% of their budget to this activity. For its part DG XVI has encouraged the

regions to raise their RTD capacity and, to this end, it launched a number of RTD-related Community Initiatives during this period, in particular STRIDE, aimed at strengthening the research and technological capacity of less favoured regions, while PRISMA, ENVIREG, EUROFORM, VALOREN and TELEMATIQUE all had a strong regional innovation component (CEC, 1994a).

In the past, innovation was too narrowly equated with RTD activity and the latter was too often perceived as a supply-side phenomenon. In other words the first generation EU programmes could be criticized for not paying sufficient regard to the social, institutional and commercial dimensions of innovation. And, to the extent that low RTD activity was defined as a supply-side problem, the 'solution' sometimes ended up as a cathedral in the desert, i.e. a facility that was massively under-utilized by local firms in the region. Recognizing the need to link supply-side initiatives to local demand-side conditions, one of the seminal studies concluded by saying:

... it is not simply the presence of units of RTD infrastructure, but of the degree of interaction between them which is the most significant factor in local innovation. The quality of the linkage and the presence of local synergy is the key element. Therefore a systems or network approach provides the best basis for understanding and promoting regional RTD-based innovation (CEC, 1988).

This simple but fundamental point is now accepted as axiomatic in the design and delivery of innovation support policies for less favoured regions. Indeed, the diagnosis of the problem has now shifted to the extent that the Commission is now proposing that 'regional planners have to address not only a supply problem (the lack of RTD capacity and mechanisms for diffusing technology) but also – and probably most importantly in the first place – a problem of demand' (CEC, 1994a).

In many ways this problem of *receptivity* on the demand-side is more difficult to resolve because it involves modifying internal routines within the firm so as to promote at least three types of competence. First, *technological* competence, the ability of an enterprise to master particular technologies that are relevant to its needs; second, *entrepreneurial* competence, the ability to integrate relevant technologies with the wider corporate strategy of the firm; and third, *learning* ability, which partly involves structuring a firm's organizational and management routines such that they can absorb information on changing markets, new technologies and innovative organizational structures. To address this problem of receptivity, the key-point to recognize is that firms are most receptive to, and likely to learn most from, other firms especially from customers, suppliers and competitors (COOKE and MORGAN, 1990; DANKBAAR, 1994). The design and delivery

of innovation support services should therefore be predicated on this crucially important aspect of micro-economic reality.

Fortunately, this insight has been woven into the design of the Regional Technology Plan (RTP) exercise which the Commission launched in June 1994. Four regions were selected to pilot the RTP exercise – Limburg (Netherlands), Lorraine (France), Saxony (Germany) and Wales (UK) – and these have been joined by a second group of regions, namely, Norte (Portugal), Central Macedonia (Greece), Abruzzo (Italy) and Castilly y Leon (Spain). Despite its rather limited name the RTP:

... starts from the principle that brakes to innovation are not always linked directly to technology: these brakes can result from a lack of qualified personnel, an absence of investment, a lack of clear leadership. In this perspective the RTP initiative goes largely beyond the bounds of technology and becomes an integral part of the policies for regional economic development ... over and above this, the exercise will open up new prospects for many actors. It will in fact provide an opportunity to break old habits and to create new openings (SHOTTON and MIEGE, 1994).

The main objectives of the RTP exercise are twofold. In the first place it is designed to encourage LFRs to develop a regional innovation *process*, in which the regional stakeholders are enjoined to define a commonly agreed, bottom-up strategy which is attuned to the nuances of their regions. Secondly, it is hoped that the RTP will provide a framework in which the recipient regions and the Commission can jointly agree a more optimal strategy for future investments in RTD initiatives at the regional level, with the result that the RTP pilot regions may be in a stronger position to utilize RTD-related programmes in the future. For its part the Commission identified some 'best practice' guidelines which should govern the design stage of the RTP exercise, and these are shown in Table 1.

Having outlined the main aims and objectives of the RTP, how should we evaluate this exercise? While it is far too early to reach a definitive judgement, not least because the results will only show up in the longer term, it is clear that the RTP is not just another chapter in the subsidy saga. With just 500,000 Ecus per region, in which the maximum contribution from the Commission is 250,000 Ecus, the RTP exercise might be dismissed as regional policy on the cheap. But such a view misconstrues the novel nature of the exercise because, first and foremost, the RTP is designed to stimulate a *collective learning* process in less favoured regions. In other words it is an attempt to persuade the key regional actors – private firms, public agencies and a wide array of intermediary institutions in such fields as technology transfer and training provision – that the initial impetus for regional renewal must come from *within* the region and that, in practical

Table 1. Regional Technology Plan guidelines

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- *A bottom-up approach*: they should be demand driven, with an emphasis on SMEs. In other words, each region must demonstrate a commitment to a demand-driven approach, based on strengthened dialogue between firms, regionally-based capabilities for research for technology diffusion, and the public sector.
 - *A regional approach*: they should have a specific territorial dimension which takes full account of the national and international context. And perhaps more importantly, RTPs should aim at building a consensus at a regional level on priorities for action between the principal actors involved. The inclusion of different regional economic agents and public and private institutions in the elaboration process and management of the RTPs should therefore be mandatory.
 - *A strategic approach*: they should apply a strategic planning approach to regional development in the field of technological development and innovation. They should plan for short and medium term actions that fit in with the long term objectives and priorities defined by the region.
 - *An integrated approach*: they should try to link efforts from the public sector (local, regional, national and European) and the private sector towards the common goal of increasing regional productivity and competitiveness. They should try to maximize the economic impact of regional, national and Structural Funds actions.
 - *An international approach*: they should keep an international perspective in terms of the analysis of global economic trends as well as on the need to co-operate nationally and internationally to be more effective in the field of RTD and innovation.
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Source: CEC, 1994b.

terms, this turns, in part, on the region's networking capacity, i.e. the disposition to collaborate to achieve mutually beneficial ends. In short, the RTP exercise is about building a stock of social capital in regions where these invisible assets are thin on the ground. Compared to the traditional repertoires of regional policy – many of which were just glorified subsidy regimes to attract mobile capital – the RTP exercise is at least engaging with the right targets, namely the institutionalized inertia which characterizes so many less favoured regions.

Developing new routines – with respect to reciprocity, trust, formal interaction and informal know-how trading, etc. – requires time, resources and, equally important a collective vision of regional renewal. To suggest that all LFRs are structurally condemned to their current status seems to foreclose all possibility for change, a truly paralysing prospect. On the other hand to pretend that all LFRs are equally capable of renewing themselves, regardless of their institutional deficits, is utopian in the extreme. Whatever the future holds in this regard, it is nevertheless encouraging to see the beginnings of a serious debate on the institutional preconditions of the learning region (ABICHT, 1994; KOCH, 1994; STAHL, 1994).

It may be instructive to recall the findings of a major study of winners and losers in the EU, which came to the conclusion that the successful regions were those which set a high premium on 'consensus, collective

success, long-term objectives and quasi-corporatist institutions' (DUNFORD, 1994). While this is the model for the RTP exercise, mere aspirations are not enough. Laudable though it is, the bottom-up emphasis of the exercise needs to be complemented by more supportive top-down initiatives at both the national and supranational level. In the absence of a more supportive macro-environment – with respect to investment, skills formation, technology transfer and regional governance structures, for example – it is difficult to see how the RTP dynamic can be sustained. Perhaps Gramsci's famous dictum, concerning optimism of the will, pessimism of the intellect, is the most appropriate interim verdict on the RTP exercise.

TOWARDS A LEARNING ECONOMY IN WALES: THE DEVELOPMENT AGENCY AS *ANIMATEUR*

Wales was invited to be one of the RTP pilot regions because, in the eyes of the European Commission, the regional authorities had demonstrated their resolve to upgrade the economic fabric through a collaborative effort between the public and private sectors. In the Commission's view the RTP approach would be most fruitful 'in areas where well-founded co-operation between the private and public sectors is – or can be – established' (CEC, 1994b). In this section the focus is not so much on the formal RTP process, but on a series of efforts designed to build a networking culture in Wales, efforts which correspond to the RTP goal of innovating by networking.

To understand the problems and possibilities in Wales, it is worth setting the context with respect to economic and institutional structures. On the economic front Wales has made the transition from a heavy dependence on coal and steel to a more diversified economy based on manufacturing and services. Unable to draw on the resources of a robust indigenous business class, the postwar modernization of the Welsh economy was developed through a combination of public sector investment in the nationalized coal and steel industries and foreign inward investment from the US, Europe and Japan. With the subsequent decline of coal and steel, large swathes of the Welsh industrial economy were dominated by foreign-owned branch plants geared towards low-skill production activities (MORGAN and SAYER, 1988). Relative to UK regions, Wales has done remarkably well in attracting foreign inward investment. Indeed it topped the UK regional league table in the decade to 1992 (HILL and MUNDAY, 1994). Even so, Wales continues to suffer from major structural problems: it has the lowest GDP per capita in the UK, it remains at the bottom end of the UK regional wages league and it has one of the lowest regional economic activity rates in the country.

For all these problems Wales is not without assets. Being a nation, rather than a region, it has benefited

from a large measure of institutional devolution in a state system which is still inordinately centralized in London. By the standards of the English regions, which are largely devoid of regional institutions, Wales has managed to develop something of a 'regional state' on which it can draw for economic development purposes (REES and MORGAN, 1991). At the heart of this 'regional state' are the Welsh Office, which is a multi-functional government department with an annual budget of some £7 billion, and the Welsh Development Agency (WDA). With an annual budget of some £170 million, and around 300 staff, the WDA is one of the largest and most experienced regional development agencies in the EU today (MORGAN, 1997).

In contrast to regions like Baden-Württemberg (where locally-based private capital plays a prominent role in regulating the regional economy, through collective institutions like chambers of commerce and sectoral associations), the business class in Wales has never played more than a muted role in civic and economic life. Historically, this can be explained by the fact that many of the coalowners were externally-based; indeed such was their limited contribution to Welsh life that when they disappeared, with the nationalization of the industry in 1947, it was as if 'they had never been' (WILLIAMS, 1990).

Recent experience with a number of leading branch plants in Wales has triggered a debate which would have been unthinkable in the past, when the branch plant was perceived to be part of the problem in LFRs (FIRN, 1976). At the heart of this debate lies the question as to whether *certain* types of branch plant can have an innovative vocation in *certain* types of regional economy because, in Wales at least, there are signs that this may be happening (LAWSON and MORGAN, 1991; PRICE *et al.*, 1993). There is also evidence to suggest that this phenomenon is occurring in other regions (AMIN *et al.*, 1994). Clearly this question – of the 'embedded' branch plant – needs to be more rigorously researched because it is hardly a uniform phenomenon (DICKEN *et al.*, 1994).

Novel demands from branch plants in Wales were one of the key factors which persuaded the WDA that it should re-think its approach to regional development. Other pressures conspired to the same end, namely, the fact that UK regional aid, which had buttressed the economy since the 1930s, had been cut by some 70% in the decade to 1992. Furthermore, the fact that foreign inward investment was becoming more and more difficult to obtain, on account of growing competition from other European regions, also made the WDA's strategy less sustainable. For all these reasons, therefore, the WDA set about revising its traditional three pillar strategy of land reclamation, advance factory building and inward investment. In contrast to this 'hard' infrastructure, the Agency began to set a higher premium on the 'soft' infrastructure of business support services, technology transfer, skills development and,

most crucially of all, it began to pay far more attention to the needs of existing firms, both local small and medium sized enterprises (SMEs) and foreign owned plants (MORGAN, 1997).

The early generations of branch plants made few demands on the regional economy, which was not surprising when all they required was a pool of tractable, low-cost labour – prosaic requirements which could easily be met by the WDA's 'hard' competencies. Over the past decade, however, the more innovative branch plants have begun to make novel, and more exacting, demands on the regional infrastructure. Among other things they have shown themselves to be interested in the quality of technical skills, the calibre of local suppliers, the availability of digital telecommunication links and the aftercare service of the WDA. Taken together, these demands required a new set of competencies within the WDA, and a more innovative approach to the way it designed and delivered its core programmes. Let us look in more detail at how the WDA is trying to respond to novelty in the periphery, beginning with the changing nature of inward investment.

Like most regional agencies the WDA has always set a high premium on attracting inward investment, especially in the form of greenfield projects. However, this type of project is no longer the most important form of inward investment in the UK. In the seven years to 1991, for example, new starts accounted for 37.6% of all foreign direct investment projects, while expansions (i.e. reinvestment at the existing site) accounted for 45.6% of projects (MORGAN, 1997). The changing form of inward investment requires new procedures and new skills because the factors which are important for new starts, like the up-front grant package, for example, are less effective in securing expansion projects. To secure reinvestment, local managers need to convince themselves and their HQs that the region offers *sustainable* attractions.

These new trends have forced the Agency to develop an *aftercare* service for key branch plants. Here the Agency has recognized that aftercare covers such a wide spectrum of services that no single agency could possibly satisfy these needs. Consequently, the WDA has put together a network of organizations – called Team Wales – through which it hopes to deliver a wide array of aftercare services. In other words the responsibility for aftercare extends a way behind the WDA itself, and this has forced the Agency into a network approach for the design and delivery of services.

One of the key parts of the Agency's aftercare repertoire is the *Source Wales* programme. Local sourcing schemes are nothing new, of course, but what differentiates the Source Wales service is that it is a supplier development programme first and a local sourcing scheme second. By working on behalf of the large firm, which is a potential customer, the Agency is able to secure the interest of local SMEs in supplier

development services to a much greater extent than if it were acting on its own account. Taking its cue from the Japanese experience, which is directly at hand in the region through the presence of 50 Japanese firms, the WDA has sought to promote long-term partnerships between major buyers and local suppliers. One of the mechanisms through which this is prosecuted is the Supplier Association, a forum in which new skills and techniques are exchanged between buyers and their key suppliers, a forum in which the large customer acts as a tutor to less talented SMEs. Drawing on the most recent thinking in the field of materials management, the Source Wales programme seems to have stimulated more Supplier Associations in Wales than any other part of Europe and it has been acclaimed as an innovative and effective programme (SEGAL QUINCE WICKSTEED, 1996).

Another category of business service is the *technology support* programme which aims to enhance the capacity for product, process and organizational innovation in the SME sector. One of the ways in which the Agency delivers this service is through on-site technology audits which identify the strengths and weaknesses of each firm. These audits, which are part-funded by the EU's STRIDE programme, have thus far assessed over 250 firms. Apart from working on a one-to-one basis, the Agency has also sought to enhance the technology-support infrastructure in the region by promoting a network of centres of excellence. This network, which embraces over 30 technical centres, is designed to offer specialized assistance to Welsh-based firms, especially to SMEs. Being largely university-based, one of the problems with these centres is that they need to develop a more professional approach to the marketing of their services because a supply-side strategy is simply not enough; if firms do not utilize their services then these centres will become cathedrals in the desert (COOKE and MORGAN, 1992).

The Agency is also learning that the best business support initiatives are those in which firms are helped to help themselves. As we saw earlier, firms are most receptive to, and learn most from, other firms, be they suppliers, customers or competitors. In an attempt to put these insights into practice the Agency has promoted the concept of *technology clubs*, a sectorally-based initiative it pioneered in the Welsh medical sector and which is now being extended to other sectors. The aim of these clubs is to network the disparate sources of expertise in each sector so as to create the conditions for collaborative learning, a process which is driven by the needs of the members (in this case, a combination of users, producers, researchers and regulators) and facilitated by the Agency.

No less importantly the Agency is now paying far more attention to the *skills* formation process. Although it has no formal responsibility for training provision – where the Training and Enterprise Councils (TECs) and the Further Education (FE) colleges

are the main delivery vehicles – the Agency has been drawn into this field because skills formulation is so critical to regional economic development. There are two ways in which the WDA has intervened in this field, but in both it plays the role of broker rather than of direct provider.

In the first place it has encouraged FE colleges to work in partnership with large branch plants to develop customized training packages for these firms. The WDA was late in recognizing the potential of FE colleges, though it was not alone in this: the FE colleges are the Cinderella of the UK's elitist education system, where vocational skills have been undervalued for the best part of a century. What really helped to raise the status of FE colleges in Wales was the way in which these colleges were treated as serious interlocutors by the Robert Bosch company, one of the most training-conscious firms in Europe. Because of the shallow base of intermediate technical skills in the UK (for example, technician and craft grades), Bosch decided to develop a close working partnership with a number of different colleges. While Bosch proved to be an exacting client, the FE colleges delivered everything that was asked of them. Limited as it was, this experience seems to have done wonders for the self-esteem of the FE staff; so much so that it has given them the confidence to design and deliver new customized training modules for other firms, some of which would not have considered the prosaic FE sector before it had received Bosch's seal of approval. On the basis of this experience the WDA is now trying to disseminate this partnership model to a wider population of firms, no easy task in a region which has specialized in low-skill tasks (MORGAN and REES, 1994).

The second way in which the WDA has involved itself with skills formation is in the SME sector. Here the challenge was even more daunting because there was no equivalent of a Bosch to play the role of tutor. Even so, the WDA, in tandem with the TECs and the FE colleges, set up a number of sector-based fora to ascertain the demand for collaborative training schemes. This led to a number of training consortia being formed to find joint solutions to common problems. By acting in concert, the SMEs felt that they could get cheaper, and more customized services, than if each acted on its own account. However, while the training packages were designed by the firms themselves, and while the costs were subsidized by the WDA, the courses were ill-attended because the SMEs found it difficult to release key staff on the specified dates. In other words, here was a training scheme which was well-designed and reasonably costed, yet which failed to meet its targets because of SMEs' internal problems. Fortunately, this scheme is being revamped to take account of certain design faults, like the problem of dealing with managers who were too junior to deliver on the agreement (MORGAN and REES, 1994).

While the Agency is beginning to address a genuine developmental agenda, instead of being just a glorified property developer, it needs to secure more autonomy from its political masters in the Welsh Office to promote this agenda. Having failed to regulate the WDA properly in the 1980s, when serious problems took root, the Conservative-controlled Welsh Office now seems intent on over-regulating the Agency to compensate for past failures (MORGAN, 1997). While Wales enjoys a reasonable degree of institutional capacity by UK standards, this capacity has never been fully tapped. For this reason, among others, there is now growing pressure for a new constitutional settlement, including a Welsh Assembly empowered to design policies which are attuned to the needs of economy and society in Wales rather than policies which reflect the Whitehall template (OSMOND, 1994).

CONCLUSIONS AND IMPLICATIONS

In this paper I have tried to advance three propositions. First, that the network paradigm helps to overcome the traditional antinomy between state and market by asserting the interdependence of public and private power and by highlighting the potential of devolved, intermediate institutions like regional development agencies. Second, that the growing confluence between economic geography and innovation studies creates a potentially significant research agenda with respect to the interactive model of innovation and the role of institutions and social conventions in economic development. Third, that recent regional development strategies, from the EU and the WDA, are striving to give practical expression to some of these theoretical ideas, not least by promoting the principle of innovating-by-networking and by exploring the potential of social capital (including trust and reciprocity) at the regional level. In this final section I shall try to spell out the implications of these new regional development strategies.

The RTP signals a decisive break from the traditional infrastructure-led approach of EU regional policy because it addresses the *process* of building a collective learning capacity in a bottom-up and interactive fashion – the most important goal of the exercise (LANDABASO, 1995). In contrast to traditional regional policy, which did little to enhance institutional capacity, the RTP consciously aims to build 'capacities for action', where this is understood to mean 'mutually coherent sets of expectations, built into conventions, which underlie technological-economic spaces, permitting the actors involved to develop and coordinate necessary resources' (STORPER, 1995). Herein lies the significance of initiatives like the RTP.

In the case of the WDA I focused on those activities – like supplier development, aftercare, technology support and skills formation – which constitute the core of its emerging regional innovation strategy.

In each of these activities the Agency is engaging with issues which lie at the very heart of the development process in peripheral regions. I would suggest that this is precisely what innovating in the periphery means: working with what exists, however inauspicious, in an effort to break the traditional institutional inertia in the public and private sectors, fostering interfirm networks which engage in interactive learning, nurturing trust and voice-based mechanisms which help to lubricate these networks and promoting a cultural disposition which sets a premium on finding joint solutions to common problems. It may be that trust, and other forms of social capital, are best developed at the regional level because this is the level at which regular interactions, one of the conditions for trust-building, can be sustained over time.

Learning, of course, is worth little if there are no opportunities to implement what has been learned. If the EU's regions are expected to do more for themselves, then they need to be empowered to design and deliver policies which are attuned to the nuances of their regional economies. This is why devolved institutional capacity is so important to the regional development agenda in the EU today. While devolution is not necessarily a progressive doctrine – witness the United States, where the Republican strategy aims to emasculate the Federal Government under the flag of devolution to the states – it needs to be championed in conjunction with a supportive central state, so that bottom-up initiatives can be complemented by top-down measures with respect to investment, training and technology-transfer. A supportive central state is also necessary to compensate those LFRs which do not have the capacity to experiment with their own institutional resources (AMIN and THRIFT, 1995).

The significance of the new regional innovation strategies has been dismissed by critics who argue that they offer little or no prospect of alleviating the key problems in LFRs, namely mass unemployment and social exclusion (LOVERING, 1996). This criticism is valid but partial: valid because innovation policy cannot resolve these problems, partial because innovation policy is not designed to do so. The WDA's regional innovation strategy has thus far had a modest effect, not least because 70 years of economic decline cannot be reversed overnight. The interfirm networks which

the Agency has promoted are as yet confined to a few key sectors, which is hardly surprising since this is an immensely time-consuming endeavour. Even so, the rationale for this strategy is sound; while it may not have created a vast number of new jobs, it helps to safeguard existing jobs, embed existing foreign plants, promote more robust linkages between these plants and indigenous firms, and helps to disseminate 'best practice' throughout the regional economy. This may not seem much, but I believe it is sufficient to justify the strategy.

However, if we are serious about addressing unemployment and social exclusion we need to recognize that conventional economic growth no longer offers a credible solution for the long term unemployed in our societies. Indeed, this problem requires more innovative *labour market* policies, like the 'socially useful third sector' (LIPIETZ, 1992; RIFKIN, 1995), the 'sheltered economy' (FREEMAN and SOETE, 1994) and the 'intermediate labour market' (WISE GROUP, 1994). The common thread running through these new labour market concepts is the idea of marrying idle hands with unmet social needs, an idea which is now being explored by the European Commission (EC, 1995). In the UK, the Glasgow-based Wise Group has demonstrated what an imaginative third sector organization can achieve, despite a hostile political climate, in offering the long term unemployed a bridge back to work (WISE GROUP, 1995). If it is to operate on an EU-wide basis, however, this third sector strategy will need to combine local knowledge of supply and demand with national and supranational political support, because it presupposes radical reform of the current tax and benefit system (GREGG, 1996).

The challenge facing LFRs in Europe today is two-fold: to raise the innovative capacity of their regional economies; and to marry idle hands with unmet social needs. Rather than dismissing regional innovation policy for not addressing the problems of social exclusion, far better to think of a repertoire of policies which affords parity of esteem to economic renewal and social justice.

NOTE

1. At this point I ought to declare a personal interest: I am a member of the R T P Steering Committee in Wales.

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