

**Universities and Regional Advantage in the
Knowledge Economy:**

**Markets, Governance and Networks as
Developing in English Regions**

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Abstract

This thesis examines the links developing between the universities and their regions in the globalising knowledge economy as observed in the UK. It examines institutional responses to two realms of policies, namely, higher education policy and regional development policy. The diversifying missions of universities, especially, the ‘third stream activities’ promoted by the UK government since the late 1990s, are set against the dynamics of the multi-level territorial governance structure emerging within Europe. The key question examined is: can the new institutional strategies of universities in order to compete in a *globalising* market be reconciled with the increased emphasis upon their *regional* engagement in various policy agendas? The tensions created here are explored through an examination of policy discourses, and by means of empirical evidence concerning different institutional networks in different spatial contexts, in particular, in the West Midlands Region and at the University of Birmingham. Applying Jessop’s strategic-relational approach to institutions, networks are conceptualised as *strategic alliances* creating the dynamics of regional innovation systems emerging within the nine English regions. The thesis argues that harnessing universities to the creation of regional advantage involves building networks of knowledge flows across different spatial scales at which the knowledge economy is organised.

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Finally, I would like to thank my Japanese friends and family, and friends in other parts of the world for warm encouragement and kind support throughout my study.

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Fumi Kitagawa

Preface

One of the interviewees said to me before answering my interview questions at The Sack of Potatoes, a pub near one of the science parks in the West Midlands Region.

“Why did you come to England? Why are you doing research with such a topic? You are a complete enigma!” This represents the perception of one interviewee of the interviewer (see Chapter 2).

Three years have passed so quickly. I came from Japan, and I came to Birmingham and started my PhD study in October 2000. It is worth noting here why I came to Birmingham to do a PhD as this seems to be one of the most common questions that people ask me when I say “I am doing PhD at the University of Birmingham”.

It started from a contact I had made at the University of Oxford. One of the ESRC funded programmes *Transnational Communities* was based in the Institute of Social and Cultural Anthropology at University of Oxford. One of the projects under the programme was on “Japanese expatriate business communities in the UK” and, as a former student of International Relations and Cultural and Social Anthropology, that was my initial interest before I launched on my PhD.

In early 2000, I visited one of the researchers who had conducted research on Japanese multinational firms in Telford, a New Town in the West Midlands and, through this researcher, I was introduced to Mr. Chris Watson, the Director of the Japan Centre of the University of Birmingham. After discussion with Mr. Watson, I decided to apply for a PhD place at the Centre for Urban and Regional Studies. Then, my academic interest was in the linkages between knowledge production of multinational firms and local/regional economic development. I wrote a research proposal and, very fortunately, I was accepted and awarded a research studentship at the School of Public Policy and further financial support from ORS.

In the summer of 2000, before formally starting the PhD study, I conducted a short preliminary research project on Japanese multinationals in Telford, and about the West Midlands Region. Mr. Watson gave me a couple of key policy documents, which were just published by the Regional Development Agency, Advantage West Midlands, and other regional bodies. This was the start. I noticed that in *Regional Innovation Strategy* and in its *Action Plans*, there were many references to Higher Education Institutions (HEIs) as lead partners. Around the same time, I visited Telford, and realised that one of the Japanese

multinationals was located just next door to the Telford campus of Wolverhampton University. My intuition worked. I thought there was something interesting going on with Universities in the Region. This is how it started. I rewrote my research proposal and the title of my thesis became “Higher Education and Regional Development Processes” though the title has changed since.

Throughout my PhD research, I have encountered so many people, and a number of them became good friends, mentors and e-mail friends throughout my research. The encounters came through conferences, seminars, research interviews, and a work placement and a number of various other occasions. Also, I travelled a lot in Birmingham, the West Midlands Region, England, the UK, in Europe, and sometimes between Japan and the UK, to attend conferences, interview people, and to ‘network’.

The rest of the thesis gives theoretical and empirical accounts of the changing landscapes of English higher education and regional development processes as I have experienced them. This is my own academic and personal account, but it is indeed part of the big national and global landscape. I could only write this thesis through all these encounters I have had over the last three years’ time.

Nevertheless, any mistakes and inappropriate accounts in this thesis are my own responsibility.

Fumi Kitagawa

October 2003

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Glossary

AKA	Alliance for Knowledge Advancement	HEIs	Higher Education Institutions
AUEE	Association of Universities in East of England	HERAs	Higher Education Regional Associations
AURIL	Association for University Research and Industry Links	HERD	Higher Education Regional Development fund
AWM	Advantage West Midlands	HERDA-SW	Higher Education Regional Development Association South West
BRDL	Birmingham Research and Development Ltd.	HEROBC	Higher Education Reach-out to Business and Community Fund
CASE	Collaborative Awards in Science and Engineering	HESE	Higher Education South East
CBI	Confederation of British Industry	IMHE/OECD	OECD Programme on Institutional Management in Higher Education
CEC	Commission of the European Communities	IPR	Intellectual Property Right
CIMs	Cluster Innovation Managers	KITTS	Knowledge, Innovation and Technology Transfer
CMI	Cambridge-MIT Institute	LDA	London Development Agency
COGs	Cluster Opportunity Groups	LEAs	Local Education Authorities
	Co-operation and Development	LHEC	London Higher Education Consortium
CPD	Continuing Professional Development	LSCs	Learning and Skills Councils
CVCP	Committee of Vice-Chancellors and Principals, now called Universities UK	MAS	Manufacturing Advisory Service
DETR	Department of Environment, Transport and the Regions	MEDICI	Midlands Medical/BioSciences Enterprise Development And Innovation Consortium
DfEE	Department for Education and Employment	MIE	Mercia Institute of Enterprise
DfES	Department for Education and Skills	MLG	Multi-Level Governance
DTI	Department of Trade and Industry	NCIHE	National Committee of Inquiry into Higher Education
DTLR	Department for Transport, Local Government and the Regions	NCN	National Competitiveness Network
EEDA	East of England Development Agency	NTIs	New Technology Institutes
EMDA	East Midlands Development Agency	NWDA	North West Development Agency
EMUA	East Midlands University Association	NWUA	North West University Association
ERDF	European Regional Development Fund	ODPM	Office of the Deputy Prime Minister
ESF	European Social Fund	OECD	Organisation for Economic
ESRC	Economic and Social Research Council	ONE	One NorthEast
EU	European Union	ONS	Office for National Statistics
FRESA	Frameworks for Regional Employment and Skills Action	OST	Office of Science and Technology
FTEs	Full Time Equivalents	P4P	Partnership for Progression
GOWM	Government Office for the West Midlands	RAE	Research Assessment Exercise
HEACF	Higher Education Active Community Fund	RDAs	Regional Development Agencies
HEFCE	Higher Education Funding Council for England	RIS	Regional Innovation Strategies
HEFCs	Higher Education Funding Councils	RITTS	Regional Innovation and Technology Transfer Strategies
HEFCW	Higher Education Funding Council for Wales. ELWa.	RSA	Regional Studies Association
HEIF	Higher Education Innovation Fund	RTP	Regional Technology Plan
		SBS	Small Business Services
		SBS	Small Business Services
		SECs	Science Enterprise Centres
		SEEDA	South East England Development Agency
		SHEFC	Scottish Higher Education Funding Council
		SMEs	Small and medium sized enterprises

SQW Segal Quince Wicksteed
STEP Shell Technology Enterprise
 Programme
SWRDA South West of England Regional
 Development Agency
TCS Teaching Company Scheme
TECs Training and Enterprise Councils
THES Times Higher Education
 Supplement
Uni4ne Universities for the North East
WMHEA West Midlands Higher Education
 Association
WMLGA West Midlands Local
 Government Association
WMRIS West Midlands Regional
 Innovation Strategies

Part I

Setting the Agenda

Part I consists of three chapters. Chapter 1 sets out the general background of the research topic, introducing the key concepts in the thesis and, identifies the key research questions. Chapter 2 provides the analytical perspectives to be employed in the rest of the thesis. Chapter 3 presents a conceptual model placing universities within regional innovation systems in the multi-level governance structure of the knowledge economy.

Chapter 1

Introduction

INTRODUCTION

This thesis is about the growing links developing between the universities and their regions in the globalising knowledge economy as observed in the UK. The thesis highlights universities' links with regional stakeholders, and the emergence of inter-organisational networks within regional innovation systems located in the multi-level governance (MLG) structure of the knowledge economy. Applying Jessop's (2001) strategic-relational approach (SRA) to institutions, networks are conceptualised as *strategic alliances*, and institutionalizing processes are examined including both public policies and the institutional responses to the policies. In particular, the thesis focuses on two areas of policy research, namely, 'higher education policy research' and 'regional development policy research'. The thesis analyses the diversifying missions of universities and highlights their new markets, specifically, in the 'third stream activities' which have been promoted by the UK government since the late 1990s. This is set against the dynamics of the new territorial governance systems emerging within English regions, and, in particular, in the West Midlands Region and at the University of Birmingham.

The consideration of the topic poses two challenges. One is the new challenge that universities are facing in relation to regional development processes, in the context of the globalisation of the knowledge economy and the devolution of governance. The other challenge, for policy makers concerned with regional development at different levels (e.g. European, national and sub-national), is to incorporate actors with a wider variety of interests including those of universities. The analysis requires an examination

of universities' activities at local, national and international levels involving the management and governance of knowledge and, influenced by policies located within such multi-level governance (MLG) structures.

Government policy plays an important role in supporting higher education and the research that universities conduct. Increasingly, universities are seen to play a crucial role in the development of hi-tech districts, through the generation of knowledge, the training of labour, the spinning-off of new business ventures and the provision of cultural amenities (Castells and Hall, 1994: 231-2). Recently, policy communities have come to view universities as being at the heart of the knowledge economy (e.g. OECD, 1996; DTI, 2000; DTI/DfEE 2001).

However, there seems to be a paradox about the role of universities in regional development processes. The assumption is made in much of the literature on innovation and technological change that universities are part of the regional innovation infrastructure (Cooke et al., 2000a: 18; Varga, 2000:141). Nevertheless, in practice, universities are seen to be difficult to coordinate as partners in a regional strategy (Legendijk and Rutten, 2003:217). This thesis aims to explain this paradox by identifying the theoretical and policy assumptions made in the literature and by providing some empirical evidence highlighting the different institutional processes unfolding in different spatial contexts with regard to the role and strategies of universities.

This study reveals how different actors play their parts in the complex organisational processes of regional development, and suggests what policies can do to support the 'collective learning' which seems to be vital in these processes. The following chapters build a theoretical framework to investigate these points and to

highlight how universities react to this situation in relation to other institutional actors and policies.

Firstly, the chapter starts by setting out the general background of the issues to be dealt with in this study. The key concepts which include globalisation, the knowledge economy and regionalisation are set out. The main institutional focus of the thesis, *universities*, its geographical focus, *regions*, and the key concept, *networks*, are also explained in relation to the main theoretical perspective to be employed in the thesis. Secondly, the chapter goes on to provide some of the background to the study, by identifying the key issues in the existing literature, followed by the presentation of the main conceptual framework to be developed in the later chapters. Thirdly, the key research questions and the objectives of the study are set out. The fourth part presents the structure of the rest of the thesis.

1-1 BACKGROUND CONTEXT

Given the movement towards a ‘new’, ‘knowledge-based’ economy and globalisation of economic activities, where knowledge and learning are seen to be the key drivers (Lundvall, 1995), it has become generally accepted that education and the generation and diffusion of knowledge are central and vital components in economic development processes.¹ The rapid development of knowledge and the high level of innovation required are challenging to the organisational structure of businesses, markets and forms of learning in society.

¹ Some authors argue that the knowledge economy consists of fragmentary ‘knowledge economies’ (Cooke, 2002:1). There are many knowledge economies as social formations as there are many regional economies, and sub-regional and local economies (Hepworth and Spencer, 2003:10). Many governments draw the administrative boundaries of the regional knowledge economy, and the later chapters follow these spatial boundaries as a framework given for the analysis (see Chapter 5; Appendix 5.1).

The argument leads to consideration of the changes needed in the ‘management and governance’ of knowledge in the knowledge economy. Public policy is one of the mediums to mobilise knowledge as ‘social action’ (Giddens, 1984). This can be done in the form of, for example, learning and innovation and by promoting education and/or research and development (R&D). In the light of this, questions are raised about the role played by institutions such as firms, universities and public bodies, as well as the suitability of traditional management methods in relation to public policies (Conceição and Heitor, 1999:37).

Globalisation, Universities, and Regions

The concept of globalisation is considered to be triggering the transformation of the existing social structures of wealth, skills, technology and production. Globalisation is more than internationalisation, which refers to “the increasing geographical spread of economic activities across national boundaries” (Dicken, 1992: 1). The recent economic dimension of globalisation, seen as the “functional integration of internationally dispersed activities”, is said to lead to “a complex set of links in a production chain across several countries” (Malecki, 1997: 191).² Some authors see the recent globalisation of economic activities as one of the push factors for the “emergence of new territorial development dynamics” (Goddard and Chatterton, 1999:686) in which universities can play a crucial part.³

² In its economic dimension, globalisation trends include “increased trade”, “foreign direct investment”, “cross-border inter-firm alliances”, “internationalisation of finance”, “wider and more rapid diffusion of technology”, and “fragmenting and increasingly customised markets”. (OECD, 2001 b: 21-4).

³ As Chatterton and Goddard (2000:476-8) argue, the issue of “territoriality” is not so straightforward for universities. To begin with, three spatial levels of activities can be distinguished in the higher education landscapes, namely, international, national and regional/local. These three levels are not exclusive but complement each other. Today universities always hope to be part of “an international knowledge network” (Kogan, 1996:129), but increasingly even the most traditional and prestigious ones look to their region and locality for support, and also claim credit for adding to the area’s economic and social strength. For example, universities have an important role to play in preserving local jobs, diversifying the local economy and becoming a key element in attractiveness to new inward investors. The latter often refers to the creation of spin-off companies, graduates’ start-ups and the establishment of science parks.

In many countries, ‘the region’ emerges as a new strategic site for economic and social development where universities are expected to play a critical and challenging role. The thesis examines why this is the case - why regions matter; what is ‘regional development’; and the ways in which globalisation affects the ‘regionalisation’ of the economy; the ways in which the emergence of the knowledge economy affects regional development processes, and whether this new regional landscape provides truly new opportunities/challenges for universities.

In a real world situation, what is meant by the term ‘region’ varies substantially. Conceptually, regions are often defined in terms of shared normative interests (culture areas), economic specificity (mono-industrial economies) and administrative homogeneity (governance areas) (Cooke, 1998:15). The constitution of the region as an administrative unit varies in different countries. The term region is sometimes used as synonym for a sub-national ‘locality’ or neighbourhood without a specific definition. From a functional point of view, this thesis sees a region primarily as a sub-national geographical *space* defined by an administrative boundary.

Of considerable interest to the conceptualisation of regions are the ways in which policies pursued by regional governments (and by the national government and possibly the European Commission) give distinctive identity to the regions in question. Thrift sees a region as “ an interaction structure” which is made up of a number of different but connected *settings for interaction*. Thus any region provides the opportunity for action and constraints upon action (Thrift, 1996:81). Taking a more systematic view, Cooke (1998:16) sees regions as a “system of collective order” based on mutual understanding, trust and reciprocity amongst the collective economic community. As such, the character of regions is constructed through the “fundamental processes of mutual interaction and moulding” (Massey, 1995:321).

In a globalising economy, which boasts rapid transportation, high-speed communications and accessible markets, one could expect location to diminish in importance.⁴ But it seems that the opposite is true. It is alleged that increasing economic globalisation is promoting greater regional economic distinctiveness and that regional economies rather than national economies are now the salient foci of wealth creation and world trade (Ohmae, 1995).

There is also a growing significance attached to knowledge production at the regional level as epitomised by the emergence of high-tech regions in the world. Besides market globalisation, the fact that knowledge has gained a key function in advanced production is said to have a particular relevance for understanding the emerging role of sub-national regions in modern economies (Varga, 2000:139). In this age of globalisation and the knowledge economy, production of knowledge, particularly localised tacit knowledge, is viewed as a valuable regional asset. Consequently, there is an increasing emphasis on the 'regional level' as a unit of economic policy implementation underlined by the theoretical focus on concepts such as 'innovative milieu' (Keeble et al., 1998), 'industrial districts' (Asheim, 1996; Markusen, 1996), 'regional innovation systems' (Cooke, 1998) and 'learning regions' (Florida, 1995; Morgan, 1997).

The Role of Universities in the Knowledge Economy

This study highlights the role played by universities in regional development processes and their new strategies in the knowledge economy. What is special about the university as an institution that it deserves distinct attention? In this thesis, universities are

⁴ Even with the globalisation processes, many networks remain national, regional and local, and international connections are strongly uneven. Thus, this thesis refers to the 'globalising economy' rather than a already 'globalised economy' (see OECD, 2001b: 21).

perceived as an “institutional type within systems of higher education”(Duke, 2002:2).⁵ Other kinds of educational providers, technical or further education colleges, private as well as publicly funded colleges, and industrial and business concerns operating as education and training providers for their own personnel and also for others are part of the ‘system’ (Duke, 2002:3). There are also research and consultancy organisations which may compete for universities’ business. There are other kinds of organisations which are involved in educational and knowledge-based activities as educational providers and knowledge makers engaging in the similar processes of knowledge creation, dissemination, application and utilisation.

The university can be seen as a particular institution and organisational ‘species’ in society. Universities, as ‘self-governing academic communities’ or ‘collegialities’, have sat somewhat outside the conventional binary sketch of private and public sectoral division. Universities as autonomous corporate entities may sit in a third, human services or ‘non-profit’ category depending on the concepts and criteria being employed (Duke, 2002:3). In each country, the conception and constitution of the university are unique. The government’s financing of universities differs significantly in each national system of higher education.⁶ It is also impossible to generalise ‘the university’ as an homogeneous institution even within one country. The nature of the university is conditioned by the economy, politics, social structure, culture, tradition and history of both the individual university and the society in which it is located. Even within one institution, a university is a diversified organisation on its own with different

⁵ Universities are seen and planned as elements or subsystems with a part to play in another authority’s larger plan of things, increasingly identified for policy purposes as elements within a *tertiary education system* (OECD, 1998) (Duke, 2002:2).

⁶ This study looks at the UK higher education system in particular (see Chapter 4). In this thesis, the word university covers higher education institutions (HEIs) in the UK, which include universities, university colleges and higher education colleges, which are funded for teaching and research by the Higher Education Funding Councils. However, when necessary, university and other HEIs are distinguished. See also Chapter 4 for discussion of the UK higher education system.

disciplinary orientations and administrative systems. In short, coming to terms with the *diversity* may be the key to understanding the university as an institution (Brennan, 1999:6).

However, universities in many countries are facing similar challenges in contemporary society. Shifting ideas about the role of the state and its relationship with civic society affect universities. As public sector utilities are sold off, broken up or part-privatised, and the social service sector, education, health, and social welfare, is brought under quasi-market structures, the different traditions in society break down (Duke, 2002:3). As conventional distinctions start to dissolve, new organisational practices and boundaries start to evolve.⁷

Broadly speaking, there are two factors that highlight the role of universities in society in general. First, the importance of learning in the knowledge economy puts forward a new role for a university. In order to participate effectively in the globalising learning economy, education and training are seen to be essential. Continuing education has increased considerably and is becoming a central element in business strategies and public concern (see Duke, 1992:1-3). The concepts of ‘lifelong learning’ and the ‘learning society’ have pushed a university from “formal teaching” to the “participatory learning” which is associated with continuous (lifelong) education and training (Conceição and Heitor, 1999:37). Consequently, there is a growing need for universities to deal with multiple demands, and multifaceted publics and stakeholders. One author states that, in the globalised “learning market”, universities concern themselves with “education of knowledge workers in a global competitive market” (Jarvis, 2000:45).

⁷ The recent institutional responses of universities to society have been described as: ‘an embracing of market values’ (Coffield and Williamson, 1997); ‘new managerialism’ (Deem, 2001); the creation of ‘entrepreneurial universities’ (Clark, 1998); ‘academic capitalism’ (Slaughter and Leslie, 1997) to name only a few. Other authors talk about the formation of ‘a triple helix model’ of university-industry-government relations (Etzkowitz and Leydesdorff, (eds.)1997) as the institutional spheres of university-

Secondly, in the innovation literature, there is a growing interest in the conditions of production of university research and of the commercialisation of knowledge. Rather than seeing innovation in a kind of linear fashion from basic research to commercial success, a more interactive model of innovation has been identified. Of particular importance in terms of policy seems to be the process of exploiting the 'knowledge capital' for economic competitiveness. In the light of this, there has been a shift in the attitudes of governments towards the roles of universities, particularly with regard to their contribution to economic development. Governments worldwide exhort universities to be entrepreneurial and to commercialise their knowledge. Universities seem to be becoming more and more 'knowledge enterprises' (Buesta, 2000) as they produce, intermediate and disseminate (scientific) knowledge in the knowledge economy in which the economy increasingly operates on a 'knowledge resource base'.

Adopting an evolutionary model of the university, one can examine how different species of universities have emerged and co-evolved over the centuries,⁸ giving different emphases to the functions of teaching, research and 'third stream activities'. An optimistic note can be made by arguing that the success of universities in adapting to past challenges suggests that they will continue to evolve and to thrive (see SPRU, 2001). It is true, though, that the current economic and political circumstances give universities in many countries one of the biggest challenges throughout their history in determining, consolidating and implementing their mission in relation to a wider society. As Kogan sums up:

industry which were hitherto relatively separate and distinct are becoming inextricably intertwined, often through government initiatives.

⁸ For historical accounts of the role of universities in society, see Delanty, 2001; *The Economist*, 1997; Etzkowitz, 1994; Willinski, 2000.

The traditional forms of research, scholarship and teaching still retain eminence in esteem and resources, but higher education is now conceptualised as multiple in functions, in professions, in client groups, in styles, in reference groups and in systems of control, management and governance (Kogan, 1996:122).

Universities find themselves now having to pay attention to “many more political centres” than before, e.g. research grants and teaching accreditation from both the European, state and the regional level (Paterson, 2001:150). The current environment for universities may be demanding and turbulent, but it also provides universities with new opportunities. This thesis is concerned with both the constraints and opportunities that universities are facing, and their institutional perceptions and responses to these environments in the knowledge economy and both globalisation and regionalisation.

1-2 THEORETICAL CONTEXTS

Interactions Between Theory, Research and Policy

The main theoretical concern of this study is to understand social change through institutional evolution and human agency, with its continuity and discontinuity. The research has to be theoretically informed, and empirically underpinned, accounting for the two dimensions of social change; causality and complex institutional change, in the field linking higher education and regional development.

Knowledge flows in many directions via local, national and international networks. The linear model of knowledge production with sharp boundaries between knowledge production and utilisation must be replaced by the alternative model whereby a continuous interaction between knowledge creation, validation, dissemination and adoption take place. None of these activities belongs to the separate domains of researchers as ‘experts’ as opposed to ‘users’ (Nutley and Davies, 2000:

324-325). Both experts and users are partners in the generation and utilisation of knowledge (Van Langenhove, 2001:16).⁹

In such new scenarios of knowledge production, both policy issues and research issues are defined and formulated through interactions in the myriad of paths in the institutional landscape where the research takes place. Policymakers worldwide have noticed the rapid growth of the sub-regional economies of Silicon Valley with a major contribution by Stanford University, and in and around Boston's Route 128 with that of Massachusetts Institute of Technology (MIT). In the UK, the impact of universities on the development of successful localities such as Cambridge has been widely recognised through the work of a consulting company (Segal Quince and Partners, 1985:52-3; SQW, 2000a). It has also been observed that regional governments engage in converting the benefits of academic research into industrial activity (Patchell and Eastham, 2001:127).¹⁰

In this study, regional development is seen as a broad concept which includes not only economic growth but also social and cultural growth, encompassing

⁹ This is where the new model of Mode 2 knowledge creation (Gibbons et al. 1994) has a big potential. Gibbons et al. refer to a shift from Mode 1 (disciplinary, curiosity-driven research priorities) to Mode 2 (problem-solving oriented) knowledge production. Mode 2 is transdisciplinary in nature, linking university and commercial interests, proving to be far more "socially accountable and collaborative than previous scientific research" (Willinski, 2000:49). One of the major implications of Mode 2 theory is that universities will no longer dominate the field of knowledge production as they did in the past (Delanty, 2001:102). There has been a shift to the user in the production of knowledge, and social actors are increasingly becoming involved in the application of knowledge. Consequently, knowledge is rapidly becoming "a new site of conflict" in late modern society (Delanty, 2001:102-4).

¹⁰ Since the mid-1990s, especially, there has been a growing convergence between the concerns of agencies with responsibility for territorial development and those in charge of the management of higher education (OECD/IMHE, 1999:26). There has been a new recognition of the agenda involved with the growing international and national efforts towards the integration of these issues into an agreed framework. These trends are epitomised in two publications which came out as a consequence of international research projects initiated in the mid 1990s: *The Dialogue of Universities with their Stakeholders: Comparisons between Different Regions of Europe* (CRE, 1998) and *The Response of Higher Education Institutions to Regional Needs* (OECD/IMHE, 1999). At a national policy level, for example, in the UK, the contribution made by higher education to their regions is mentioned in the report by National Committee of Inquiry into Higher Education, *Higher Education in the Learning Society* (Dearing Report) (NCIHE, 1997). In Australia, a report, entitled *Universities and their Communities: Creative regional development through knowledge-based Engagement*, was published for the Department of Transport and Regional Services (Garlick and Pryor, 2002).

institutional capacity building within the territory. Regional development policy has two dimensions: one is wealth creation in regions through promoting innovation; the other is wealth distribution through reducing regional disparities. Many of the existing models of university-industry interaction emphasising high-technology knowledge transfer and academic entrepreneurship activities seem to underestimate the importance of universities in enhancing social capital by interactive learning, creating networks and trust. Empirical evidence is needed not only from success stories of high-tech regions but also from the experience of less favoured regions (LFRs). A robust theory needs to be constructed which can lead policy as well as be 'led by policy' (Lovering, 1999).

There are various 'knowledge actors' and 'support organisations' that define and articulate the policy and research agenda of the topic of this study. These include universities themselves, consortia of universities, university researchers, private consultancy firms, private sector researchers and consultants, public sector research organisations and their researchers; policy makers at national and local levels; regional development agencies; knowledge and technology transfer centres; and business and enterprise centres of universities and their professional staff. These are some of the institutional actors that comprise the 'landscape' of this study providing the researcher with different 'narratives'. This thesis also provides one of these narratives consolidated by analysis of the literature and supported by observation and other research evidence and seeks to contribute to a *dialogue* between theory and evidence on the one hand, and between research and policy on the other.

The field of research chosen in this thesis stands at the conjuncture between two realms of research intrinsically linked to a public policy agenda: one is 'higher education policy research' (Meek, 2000) and the other, which is here named as, 'regional development policy research'. In drawing the research design, attention is paid

to two factors. One is the ‘institutional strategy’ for the management and policymaking of universities. The other is the ‘local social and economic strategy’ implemented at local and regional level often in a framework given by the national government.

So, the scope of this thesis involves two areas of policy research: higher education policy and regional development policy. It is not so much about particular policy per se, but the focus is on the outcome of the interactions of the major policy actors within the wider context. Complex institutional and spatial arrangements and processes are studied in relation to the formation and implementation of public policy. Each area of policy research needs to look at interactions and the outcome of the interactions between policies and the institutional actors, including various public and private organisations, which comprise each ‘organisational field’ (DiMaggio and Powell, 1983).

Universities, Regions and Networks in the Multi-Level Governance Structure

Universities’ priorities in their relationships with their regions/localities and their stakeholders are quite complicated (Charles, 2003:13; Chatterton and Goddard, 2000:478). However, since the mid 1990s, there has been a growing convergence between the concerns of agencies with responsibility for territorial development and those in charge of the management of higher education. For industry, local authorities and regional development agencies, universities are increasingly seen as ‘local assets’ to be exploited for the benefits of the regional economy.

Nevertheless, there are few theoretical and empirical underpinnings that explore the formation of ‘triple helix’ links between academia, industry and government especially at the regional level as part of regional innovation systems. As the following chapters reveal, this study shows that both universities and regions comprise a “complex spatially nested institutional arrangement” (Martin, 2001:204) in which knowledge is

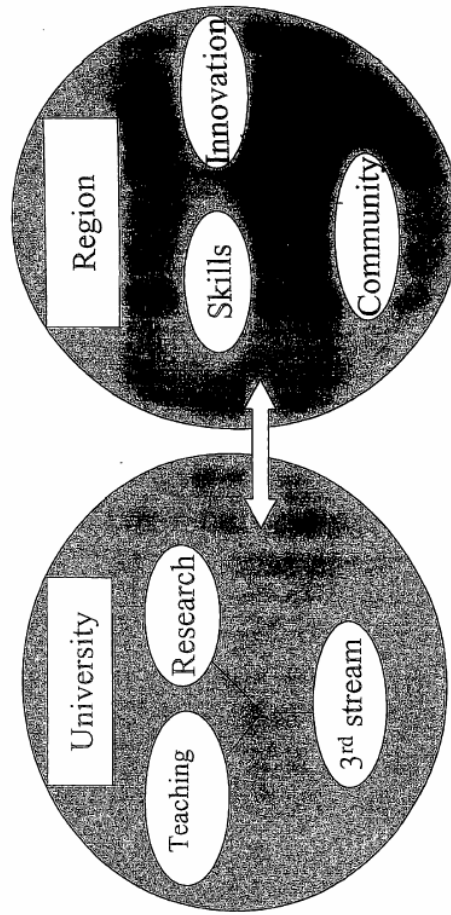
created, disseminated, applied and utilised. This institutional landscape needs to be studied and analysed as part of a robust theoretical framework taking in the formation and implementation of public policy.

In the light of the regionalisation of the economy and the importance of knowledge on a global scale, it has been pointed out that universities especially play important roles at the regional level with the emergence of new clients and stakeholders in terms of both teaching and research (Goddard and Chatterton, 1999). It is also argued that universities, through their resource base of people, skills and knowledge, increasingly play a significant role in enhancing regional development capacity. Furthermore, there has been a growing recognition of the significance of the role played by universities, in what can broadly be called the ‘third stream’ activities that exist in addition to teaching and research.¹¹ The emergence and growth of these third stream activities in relation to the new ‘regionality’ of university activities are strongly featured in this study. Figure 1.1 summarises the discussions in this study in diagrammatic form.

¹¹ Third stream activities include university-industry links such as technology transfer, consultancy, creation of spin-off firms, student placements, links with local bodies and community functions. See Chapter 4 for discussion.

Figure 1 University/region dynamic interface

Created based on Goddard and Chatterton (1999)



At a conceptual level, it is argued that higher education plays a key role in the processes of industrial innovation, and university-industry links and collaboration are crucial for the efficiency of that process (Schuetze, 2001). Universities are seen as a central part of regional innovation systems because they carry out R&D and function as a pool of locally developed knowledge. Nevertheless, it has also been pointed out that the successes of such technology and innovation policies are surprisingly limited in many European regions (Hassink, 1996 cited in Lorenzen, 2001:177; Lagendijk and Rutten, 2003:217).

These observations need to be linked to the wider social structure of the regional development landscape, especially in relation to the MLG structure of regional development policies in the European Union (EU) and the new relationships being forged between stakeholders at various geographical levels, including vertical and horizontal partnerships and networks within what may be termed sub-national MLG structures.¹² The questions are whether there is a synergy between different domains of partnerships and networks, and how they form part of the complex web of institutional arrangements and strategies as part of innovation systems.

The Strategic-Relational Approach to Networks

Institutions are embedded in a social and institutional setting that shapes, and is shaped by, their strategies and structures (Saxenian, 1994:7). Granovetter (1985) argues that firms are embedded in networks of social and institutional relationships that shape, and are shaped by, their strategies and structures. He argues that economic action is not simply the aggregate of the actions of isolated individuals but is further 'embedded' in

¹² There are different MLG structures/models developing under the EU regional policies. For MLG models in the context of regional innovation, see Cooke et. al. (2000a :100-3).

social relationships, even suggesting that networks of ‘weak ties’ might be more dynamic than those dominated by strong ties.

Since the mid-1990s, there has been a growing convergence between the concerns of agencies with responsibility for territorial development and those in charge of the management of higher education. Some authors argue that higher education increasingly plays a significant role in “regional networking and institutional capacity building” (Goddard and Chatterton, 1999: 688). In such a context, how far universities are able to co-operate with other actors to cover a broad range of knowledge depends on each university’s values and strategies, and on their ability to become a “network organisation” (Buesta, 2000:404). The regional role of universities has been re-focused, and more widely recognised in recent years in their international and national policy environments (see Chapter 4).

This study proposes an analytical framework to investigate the ‘embeddedness’ of universities in social relationships not only in their regions but also within their national and international social settings. *Networks* are seen as *strategic processes* through which institutional actors achieve their interests in a *selective* (or *selected*) context as part of the wider structure (Hay, 1998; Jessop, 2001). This approach enables the researcher to grasp the organisational strategies of *actors/agents* shaping, and being shaped, by a wide *structure*. This conceptualisation of networks encompasses processes of knowledge production and power relations, which define the networks across different geographical scales located within Massey’s “power geometry” (1993:61).¹³

¹³ There are different conceptualisations of networks. For example, Cooke and Morgan (1993) regard networks both at the interfirm and at the intrafirm levels as acquiring a new dominance in the field of industrial organisation. See also, Markusen (1999) and Chapter 2 (p.36-7) for discussion.

1-3 RESEARCH QUESTIONS AND OBJECTIVES

Research Questions

It is on the interactions between the aforementioned two policy areas, or two organisational fields, that this thesis focuses. The key question examined in this thesis is: can the new institutional strategies of universities in order to compete in a *globalising* market be reconciled with the increased emphasis upon their *regional* engagement in various policy agendas? From the particular interest of this thesis, three key theoretical questions are raised on the roles played by universities and institutional networks at a 'regional' level.

- What are the implications of the 'regionalisation' of innovation systems for universities as knowledge institutions?;
- In what ways do the third stream activities of the universities influence the evolution of regional innovation systems? ; and
- Can universities as collective entities be considered as part of the innovation systems of their regions?

From a perspective of policy and management in both higher education and regional development, a further three key questions can be asked about the actual potential for universities to give a real stimulus to innovation and competitiveness in the regions where they are located.

- What kind of governance mechanisms should be constructed to enhance universities' responsiveness to industry and social need, especially at a regional level to enhance the competitiveness of their regions?;
- Can all universities in a region be considered as centres of regional economic growth and social development?; and
- What kind of institutional mechanisms does a university need to develop in order to balance the forces of regional/global competition and collaboration?

The tensions are explored through an examination of policy discourses, and by means of empirical evidence concerning different institutional networks in different spatial contexts.

Research Issues and Objective

The empirical research setting is located in the UK, investigating UK higher education policy and regional development policy. In the UK, the roles of universities in enhancing national and regional competitiveness are expressed in several recent government documents. In the UK, the process of devolution has already started in Scotland and Wales. In England, newly created Regional Development Agencies (RDAs) are now implementing regional economic strategies to enhance regional competitiveness and tackle regional disparities in the nine English regions. This thesis focuses on the English regions (some references are made to experience in Wales and Scotland, but experience in Northern Ireland is mostly excluded for lack of time and space). As explained in the next chapter, the main period of study covered in this thesis is broadly from the election of the New Labour Government in 1997 to 2003 but the study aims to provide at least brief historical accounts of the social relationships of the institutional actors.

Six distinctive strands or areas focusing on the role of universities in a locality were identified through the initial literature survey in the aforementioned two areas of policy research:

- 1) The direct economic contribution of universities to their localities through their employment and consumption;
- 2) The ‘spill-over of knowledge’ and technology transfer from universities as ‘external economies’ and agglomeration;
- 3) Universities as parts of ‘regional innovation systems’ via the different mechanisms of local academic knowledge transfer and innovation support mechanisms;
- 4) Universities as parts of the ‘local learning system’ focusing on their contribution in terms of human capital and skills development;

- 5) Universities' contributions to regional development, regeneration and governance issues by providing expertise and social capital; and
- 6) Universities' roles in terms of cultural, environmental and health provisions.

The role of universities in regional development goes beyond a narrowly techno-economic approach.¹⁴ There is growing emphasis on the university's contribution to the less tangible aspects of the development process, such as building social networks that link the universities to key actors in the local community and feed intelligence into these networks (Goddard, 1997:20).¹⁵ Thus, it was decided that among the six strands of areas identified above, the third, fourth and fifth areas would be the focus of this study. Furthermore, the review of existing literature seemed to indicate that little attention had been paid to the ability of different universities to deliver different areas of expertise and the 'complementarity' of institutions in a regional framework in relation to government policy initiatives. The mechanisms of inter-organisational collaboration are

¹⁴ It seems that much of the literature regarding the university's contribution to the locality has been narrowly concerned with 'econometric analysis of the multiplier associated with university staff and student spending in the local economy' (e.g. McNicoll, 1995), or with the role of universities in 'technological transfer' such as the creation of spin-off companies and the establishment of science parks. The impact of universities is not restricted to the technological sphere but may spread into the wider social and economic performance of the region. For example, despite the large published literature on high-technology industries linked to research conducted at universities, there have been little analysis of the contribution of labour-market processes to the growth and development of high-technology agglomerations. It has been long recognised that access to skilled labour is an important determinant of the locational process in high-technology industries. (Angel, 2000:127-8). See Chapter 3, p.72.

¹⁵ Some existing literature in higher education management show the importance of leadership, the promotion of interdisciplinary cooperation, a concern to match student learning outcomes to regional labour market needs, and the provision of support for staff to engage with regional stakeholders (Garlick and Pryor, 2002:24). However, very few studies have examined the strategies and policies of universities, and of university departments to increase the processes of interaction between the universities and their regions. With regard to the relationships between academia and business, for instance, there are only a few works focusing on the role of the internal mechanisms of universities such as Industrial Liaison Offices (ILOs) or Technology Licensing Offices (TLOs) (Cooke et al, 2000b; Jones-Evans, et al 1999; and Hatakenaka, 2002). Universities' technological support services or technology transfer infrastructure, which are recognised under 'innovation support policies' need not serve only as technology providers in the narrow sense. They may also further the processes of learning and communication, creating networks of institutions and building up 'social capital' through collective learning processes, often linking the local institutions to resources available outside the locality. However, many of the existing models of university-industry interaction, emphasising high-technology knowledge transfer and academic entrepreneurship activities, seem to underestimate the importance of universities in interactive learning, creating networks and trust.

growing with regard to third stream activities. This is the area to which this particular study makes a significant contribution.

1-4 STRUCTURE OF THE THESIS

The thesis consists of four parts. Part I sets the agenda for the thesis with this introduction and two other chapters. Chapter 2 introduces Jessop's 'strategic-relational approach' to institutions (2001), and develops the theoretical and methodological perspective centring around the notion of networks, based on the theoretical framework provided by Hay (1998; 2002). A central conceptual framework is developed in Chapter 3 by reviewing the literature of regional development and by extending this to the idea of universities as parts of regional innovation systems under the multi-level governance structure. A network perspective is developed to analyse wider institutional linkage within a region involving universities and other players, investigating the emergence of the new architecture of the regional knowledge economy. This analytical framework is applied to empirical cases in later chapters. Part II provides the policy contexts of the study. Chapters 4 and 5 present concrete institutional and policy settings, namely, higher education policy and regional development policy, located within the particular national context of the UK. Part III examines the different dimensions of network formation in different spatial contexts by highlighting three sets of different 'organisational fields' (Clegg, 1994), which are explained in detail below.

The thesis introduces the first organisational field in a chapter entitled: *The History and Geography of The University of Birmingham*. The purpose of the analysis of this particular organisational field is to explore the institutional change at one particular university in response to the introduction of recent central government reforms and to identify the transformation in the West Midlands higher education

landscape where it is located.¹⁶ A university can choose to be an international, national, or/and local and regional player, but the choice is conditioned by the history, resources, markets and expertise of the institution, and by government policies which influence its organisational behaviour. A range of recent networks that the University of Birmingham has made within the University itself and with organisations at the regional level are delineated to highlight the institutionalisation processes of the University as a strategic actor. This micro-level analysis of one organisation sheds light on the strategies and institutional adaptation of a university as an agent in the wider structure. At the same time, the wide range of university activities and the spatiality of its wider markets need to be considered. It is shown that the region is only one part of the university's organisational fields.

The second organisational field is dealt with in the chapter named: *Universities and the Formation of Innovative Networks in the West Midlands Region*. This chapter focuses on the regional institutionalisation processes at meso-level with a focus on one particular region in England, namely, the West Midlands Region. Understanding the specific historical institutional settings of each region is vital to this analysis. The main structural background provided earlier in Chapters 4 and 5 is supplemented here by a more detailed processual analysis of the organisational field with its institutional actors and their different characteristics.¹⁷ Universities differ in organisational history, resources and aspirations, and in their relationships with the Region, namely with business and the communities, students and other partner bodies within the Region. To elucidate the different perceptions of the institutional actors with regard to the Region is one of the aims of this chapter. The diversification of the higher education market in

¹⁶ Each university is unique, and organised differently, and one university does not represent the higher education system in the UK as a whole.

England is thus elucidated. This chapter, as the main regional case study, can help explain the particular characteristics and articulation of the development of the specific innovation systems, namely the West Midlands' innovation system.

The third organisational field is dealt with in a chapter entitled *Knowledge Networks as Regional Strategy: Universities and Multi-Level Innovation Systems in English Regions*. This chapter introduces a comparative perspective across the nine English regions at macro level and examines the emergence of different innovation systems in the nine regions. The forms of networks and collaborative mechanisms developing in each region are conditioned by the wider structure in which each region as an organisational field is located. The particular focus in this chapter is on the different forms of networks as strategic alliances developed or being developed between RDAs, Higher Education Regional Associations (HERAs) and other higher education consortia in each region. It should be noted that these regional networks exist within some wider national network structures as set out in Chapters 4 and 5.

Part IV summarises the earlier discussion in the thesis. In Chapter 9, following the theoretical framework of the strategic-relational approach to networks, different forms of university collaborative mechanisms developing in English regions are explained by both structural and agency factors. Typologies of different models of university-based regional innovation systems are drawn up based on the cases presented in Chapter 8. Chapter 10 concludes the thesis by identifying the key findings, its theoretical and methodological contributions, and the implications the findings have for public policies and future research whilst recognising the limitations of the research and the opportunities for future work.

¹⁷ There are eight universities (including Birmingham) and five other higher educational institutions in the West Midlands Region. Out of these eight universities, three are so-called *old universities*, and five are *new universities*, i.e. became universities after 1992.

Chapter 2

Theoretical Perspectives, Research Design and Methodology

INTRODUCTION

The purpose of this chapter is to establish the range and diversity of analytical perspectives that can be employed for social research, and to identify the one which this particular study is going to employ throughout the rest of the thesis. The chapter introduces the concept of an ‘institutional turn’ in social sciences. This refers to a broad and loose body of literature, which concerns the importance of ‘institutions’ in social analysis. In particular, this thesis draws on the theoretical perspective of Jessop (2001), positing that institutional turns have to be analysed as complex and emergent phenomena which focus on the processes of institutionalisation, locating actors, their identities, interests, strategies and tactics in a wider “strategic-relational” context. Applying this strategic-relational approach (SRA) as proposed by Jessop, Hay (1998; 2002) develops the concept of ‘networks’ taking account of the embeddedness of social actors within a wider context. Clegg (1994) develops the notion of ‘organisational fields’ by shedding light on the relational aspects of power between organisations and individual actors. These theoretical perspectives introduced in this chapter are going to be employed throughout the thesis in order to investigate the *institutionalising processes* involving not only organisations, but also policy, practitioners and researchers.

Thus, firstly, the chapter sets out the theoretical perspectives to be employed in the thesis. Secondly, the theoretical frameworks are applied in the real context of the research settings. The topic of research is contextualised in relation to the two areas of policy research, higher education policy research and regional development policy research. The research design which is integrated into the structure of thesis is presented.

Thirdly, the actual process and methodology of conducting the research is indicated. The final section discusses the linkage between theory, data and analysis, followed by recognising some of the limitations of the research not least due to lack of time and space.

2-1 THEORETICAL PERSPECTIVES

New Institutionalism

From a theoretical point of view, the main concern of this study has been to understand social change through institutional evolution, with its continuity and discontinuity, by shedding light on the interactions between institutional actors and the wider structure. It is argued that across the social sciences as a whole, from political science and sociology to economic geography, there has been a renewed interest in institutions in the last two decades. For example, there have been explicit debates about “the institutional relations of political-economic spaces” (Philo and Parr, 2000:513), and about “the relationship between institutional dynamics and economic development”(Wood and Valler, 2001:1139). Bob Jessop terms this as an ‘institutional turn’, which he defines as:

the more or less consistent elaboration of the intuition, hypothesis, or discovery that ‘institutions matter’ in one or more theoretical, empirical, or practical contexts where their existence and/or relevance had previously been overlooked, denied or deliberately ignored (Jessop, 2001:1213).

These issues are being addressed from a range of theoretical frameworks and disciplinary perspectives, which are very broadly called ‘new institutionalism’ in the social sciences.¹ New institutionalism emphasises the mediating role of the institutional contexts in which events occur, drawing attention to the significance of history, timing and sequence in explaining social dynamics.

¹ DiMaggio identifies three forms of new institutionalism within the social sciences as a whole – rational action, social constructionist, and an approach concerned with how institutions mediate conflict, each rooted in a different discipline: economics, sociology and political science respectively (1998:696-7).

In particular, over the past decade, work on innovation and urban and regional studies in economics, geography and sociology has been marked by an increased concern with institutions, and discussions concerning “the institutional foundations of urban and regional economic growth”, and the development of new forms of political-economic governance and relationships between “institutional character and configuration”(Wood and Valler, 2001:1139). It is now widely recognised that innovation processes are “institutionally shaped” by a variety of institutional routines and social conventions (Morgan, 1997:493). For example, recent evolution-oriented and institutional analyses have shown that the aptitude for innovation, whether it be that of a firm, a region or a nation, is related to the capacity for introducing “either new elements of knowledge or combinations of existing knowledge” (Kirat and Lung, 1999:28).

So what are institutions? The definition of institutions is difficult since institutions are often “vague, diffuse, and mutually inconsistent”(Jessop, 2001:1220). One strand of conventional social scientific literature tends to regard institutions as “social practices that are regularly and continuously repeated, that are linked to defined roles and social relations, that are sanctioned and maintained by social norms, and that have a major significance in the social structure”(Jessop, 2001:1220).

Other authors in this frame see institutions as ‘rules’ rather than ‘practices’. Barley and Tolbert (1997:96) define institutions as: “shared rules and typifications that identify categories of social actors and their appropriate activities or relationships”. Storper’s (1997: 268) distinction between ‘institutions’ and ‘organisations’ also seems to be useful. *Institutions*, according to Storper, are customary, and sometimes informal, rules of practice between groups and individuals, whereas *organisations* relate to far more programmed and prescriptive political and administrative forms.

The alternative view regards institutions as organisations or social bodies that have major significance for the wider society and act in a quasi-corporate manner. In this view, owing much to the economics/sociology of organisations, the words institutions and organisations are seen as almost interchangeable. The concept of ‘institutional thickness’ introduced by Amin and Thrift (1995) rests on a conflation of institution and organisation because it involves a plethora of organisations that interact intensively, generating shared understandings, socialising costs, and developing mutual awareness of being involved in a common project to promote and sustain local or regional economic development (Jessop, 2001:1221).

This thesis principally adopts Amin and Thrift’s point of view focusing on the interactions of organisations, and considers that the concept of institution includes processes which lead to the formation of shared rules and practices both *within* and *between* organisations. In this line of thinking, questions are raised about the role played by organisations such as firms and universities, as well as about the suitability of traditional management methods within organisations and about public policies towards organisations (Conceição and Heitor, 1999:37). These factors all affect institutional processes.

From a theoretical point of view, Manion and Flowerdew provide good epistemological reasons for adopting an institutional approach in research. They regard the institutional approach as a *middle way* between “the search for generality of theory on the one hand and the desire for relevance to specific applications on the other”(1982:3). In Jessop’s term, these attempts are associated with a *methodological* institutional turn, whereby “ontological antimonies, epistemological dualisms, and methodological dilemmas in social sciences” (Jessop, 2001:1216) are allegedly mediated.

Structure- Agency Debates

This last point leads to one of the long-standing debates in the social sciences, that on ‘structure/agency’, and it is worth taking a note that certain institutional perspectives have strength in mediating between “everyday social practices and reproduction of broader social structures or networks” (Wood and Valler, 2001:1142).

In explaining social phenomena, two types of explanation can be broadly identified:

- those which appeal predominantly to what might be called *structural* factors; and
- those which appeal principally to *agency* factors.

Structure basically means context and refers to the setting within which social, political and economic events occur and acquire meaning with some regularity or structure over time. *Agency* refers to action, in particular human and social conduct. It can be defined as “the ability or capacity of an actor to act consciously and, in so doing, to attempt to realise his or her intentions” (Hay, 2002:94). Structural factors emphasise the context within which political events, outcomes and effects occur - factors beyond the immediate control of the actors directly involved; whereas agency factors emphasise the conduct of the actors directly involved - implying that it is their behaviour, their conduct, that is responsible for at least some of the effects and outcomes to be explained (Hay, 2002:95-6).

The question of the relationship between structure and agency has emerged as a key focus of analytical attention in the social sciences in recent years (Archer, 1990; 1995; Giddens, 1984²). What is required is a mode of analysis capable of reconciling

² In his structuration theory, Giddens (1984) rejects the “dualism” that treats structure and agency as logically exclusive, and argues that they are mutually constitutive and in some senses identical. For Giddens, structure and agency are internally related or ontologically intertwined and comprise a ‘duality’;

structure and agency factors within a single explanation without vacillating between these two poles. Agents take actions in their context and utilise the consequences of these actions for their development as agents and for that of the context itself (Hay, 2002:113). The agents can be either individual or collective actors. If collective, an account of how the agent has gained the collective agency is needed.

The Strategic-Relational Approach to Institutions

As already mentioned (p.22), Jessop (2001) presents the SRA as his own theoretical (ontological) model developed in order to overcome the structure-agency dilemma and to go beyond the “duality of structure and agency” proposed by Giddens (1984). The SRA allows for an evolutionary approach providing a broad theoretical framework to analyse the dynamics of selectivity of institutions in relation to the reflective choices of actors. It is a general and essentially heuristic model, highlighting a move from dualism or dualities to “genuine recursive-reflexive dialectical analyses”(Jessop, 2001:1226).

According to Jessop, the SRA involves the study of “structures in terms of their structurally inscribed strategic selectivities and actions in terms of (differentially reflexive) structurally oriented strategic calculation”(Jessop, 2001: 1223).

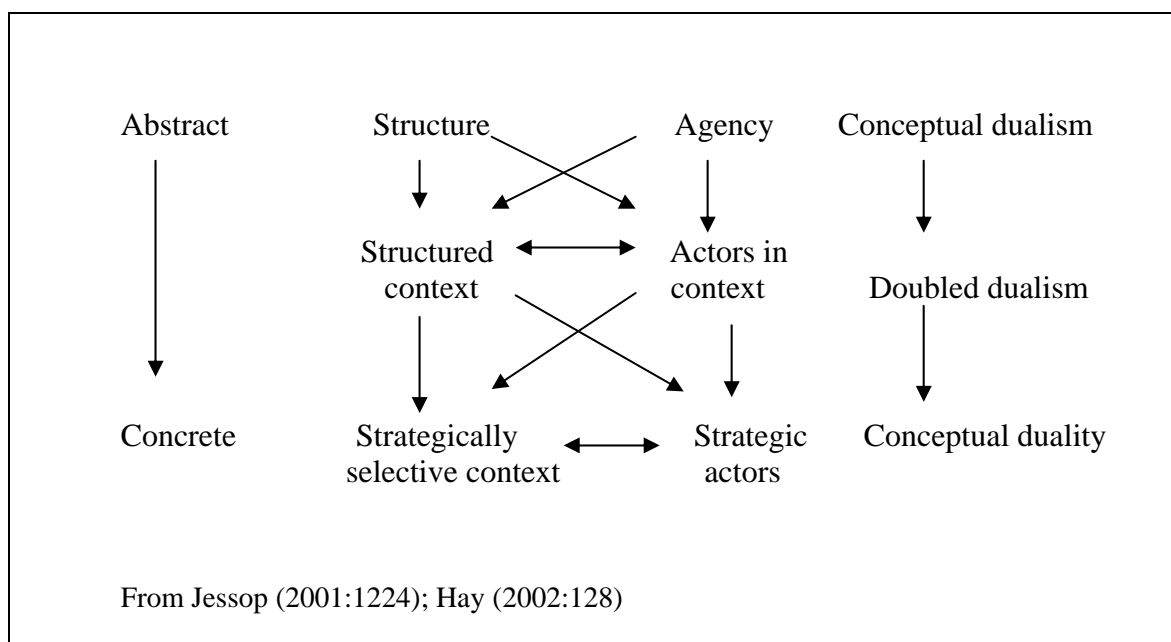
Applying this approach involves examining how a given structure may privilege some actors, some identities, some strategies, some spatial and temporal horizons, some actions over others; and the ways, if any, in which actors (individual and/or collective) take account of this differential privileging through ‘strategic-context analysis’ when choosing a course of action (Jessop, 2001:1223).

Archer criticises structuration theory for being premised upon a false assumption that structure and agency comprise a duality and not a ‘dualism’. For Archer, structure and agency are ontologically independent, capable of exercising “autonomous influences” (1995:6). For Giddens, structure and agency may be separable analytically, but they are not separate ontologically. Giddens employs coin analogy: structure and agency are flip sides of the same coin, of which one can view only one at a time. According to Hay, Giddens appeals to an ontological duality (interlinking) of structure and agency, but delivers an analytical dualism (separation). This is incapable of tracing the dialectical relationship between structure and agency. Hay employs an analogy of metals in the alloy from which the coin is forged. Structure and agency, though analytically separable, are in practice completely interwoven (we cannot see either metal in the alloy only the product of their fusion) (Hay, 1995:200).

The SRA is based on “methodological relationalism” in its insistence on treating social phenomena in terms of social relations (Jessop, 2001:1223) The SRA offers the potential to transcend the dualism between structure and agency. Instead of referring to structure and agency which are merely theoretical abstractions, the SRA suggests concentrating upon “the dialectical interplay of structure and agency in real contexts of social and political interaction” (Hay, 2002:127).

A more useful distinction is made between *strategic action* on the one hand, and the *strategically selective context* within which the action is formulated and upon which it impacts. In order to devise a new conceptual framework which emphasises the ongoing interaction of structure and agency, Jessop seeks to bring agency into structure by producing *a structured context* (an action setting); and to bring the structure into agency by producing *a contextualised actor* (a situated agent). The dialectical relationship between the structural context and the actor in the context yields a new inter-related conceptual pairing: *a strategic actor within a strategically selective context*.

Figure 2.1 The Strategic-Relational Approach



Jessop's contribution is not merely to acknowledge that agents both internalise perceptions of their context and consciously orient themselves towards that context in choosing between potential courses of action through strategy, which is "intentional conduct oriented towards the environment in which it is to occur"(Hay, 2002:129). Jessop's other contribution is to recognise that the strategic environment itself is strategically selective. Each context privileges certain strategies over others as means to realise a given set of intentions or preferences. Hay points out that, in the existing literature on structure and agency, little insight is provided into the "selectivity of contexts"(Hay, 2002:129). In the framework of the SRA, it is acknowledged that both actors (whether individual or collective) and the contexts are constantly changing. Though actors are each conceptualised as intentional and strategic, their preferences are not assumed to be fixed, nor to be only determined by the material circumstances in which they find themselves.

According to Jessop, adopting a SRA has several implications for how to take or make an institutional turn. First, institutions never exist outside of specific action contexts. Institutions matter, in terms of "their structurally inscribed strategic selectivity", in other words, *institutions select behaviours* (Jessop, 2001:1226, original emphasis). Secondly, institutions do not fully and precisely determine the course of action, whilst "actors have some freedom of manoeuvre to choose a path of action more or less skilfully and reflexively" (Jessop, 2001:1226). The capacity of actors to reconstitute institutions depends on "the changing selectivity of given institutions and on their own changing opportunities to engage in strategic action"(Jessop, 2001:1226).

Institutionalisation and Organisational Fields

Jessop (2001:1221) preliminarily clarifies three steps to be taken in order to "put institutions in their place". The first step is to "define, locate and thematise institutions

so that they become less vague and liminal”. The next step is to ask questions about “institutional embeddedness or about institutional governance, that is, governing of institutions and institutional relations and their systematic environments”. Thirdly, there are issues surrounding institutional design and implementation. Those involve paying attention to “the reflexive skills and capacities of actors” as well as to “the inevitable disjunctions between the intentions of institutional designers and actual institutional outcomes”. This provides a useful guidance for the institutional approach.

The literature of new institutionalism mentioned above seems to introduce two shifts in the previous institutional landscape. Firstly, it has been argued that what is important is not the presence of institutions as such but “the process of institutionalisation; that is the institutionalising processes” (Amin and Thrift, 1994:15). However, new institutionalism argues that there still remains insufficient emphasis on institutionalisation as a process. There is a need for clarification about “how a new institutional pattern gets created and sustained in a given locale and be [sic] replicated” (Hatakenaka, 2002:43). According to Wood and Valler, this emphasis on processes of institutionalisation leads to a wider recognition of “the mutual constitution and evolution of economic, cultural, and political forms and practices and their varied institutional expressions”(Wood and Valler, 2001: 1141). In other words, it is important to examine the construction of each institution as “a geographical and historical process [which] highlights the recursive relationship between social practice and institutional form” (Wood and Valler, 2001:1142).

Secondly, there is a shift from the traditional concern with a single institution to an interest in the bodies of institutions or “complex institutional ensembles and regulatory networks” (Valler et al., 2000:417).

This means that we do not have to be discussing just one visible institution anchored in a single location, situation or site, a big blocky building with grounds and rooms, but rather can be concentrating on *a spidery network of dispersed intentions, knowledges, resources and powers* (Philo and Parr, 2000:514, my emphasis).

As one turns from single institutions to examine issues of institutional ensembles, institutional interfaces, institutional design, or even inter-systematic relations, more attention needs to be paid to “the structural coupling and co-evolution of institutions” as well as to the attendant problems of “their strategic coordination or guidance” (Jessop, 2001:1221). It is imperative to have a closer look at the “specialised complex of institutions, norms, conventions and social calculations” (Jessop, 1998:88) behind social changes. This is where the notion of networks as institutionalising processes between organisations turns out to be very useful.

In terms of the relationship between organisations, a useful perspective is found in the field of organisational sociology. DiMaggio and Powell (1983:150-1) propose a framework for understanding how organisations in a group influence each other with formation of an ‘organisational field’. The concept of organisational fields can be defined as “aggregations of organisations that are involved in similar activities”. Using the concept of organisational fields, DiMaggio and Powell (1983) develop the idea of ‘institutional isomorphism’ drawing attention to the fact that many organisational fields show a strong tendency to increased homogeneity. There are three reasons for this organisational homogeneity. Firstly, organisations become increasingly similar where they compete for the same resources, and where they need to adapt to the same external environment due to political and institutional legitimisation. Secondly, many organisations tend to use similar sources for information from which similar norms and values emerge. Thirdly, inter-organisational interaction encourages imitation of

organisational practices or even the copying of organisational structures (see Lagendijk and Cornford, 2000:210).

Clegg adds a further useful analytical perspective to the notion of organisational fields. The integrating framework in Clegg's work is the idea of "circuits of power"(Clegg, 1994:16-20).³ Clegg identifies tendencies of divergence as well as convergence within organisational fields, and the distinctive impact of agents and organisation in the field through three dimensions of the circuits of power. The first dimension of circuits refers to the exertion of normal power. The second dimension is called disciplinary power which corresponds to the forces of institutional isomorphism. The third dimension refers to the power which has the capacity to bring about fundamental shifts in the organisational field, modifying rules and practices including the rules fixing meaning and membership (see Lagendijk and Cornford, 2000:211).

Network Theory

The late 1980s witnessed the (re-) emergence of a rather eclectic body of work under the heading of a "network paradigm" (for a review, see Cooke and Morgan, 1993)⁴ partly as a move away from the 'Post-Fordism debate'. Cooke and Morgan (1993) regard networks both at the interfirm and intrafirm levels as acquiring a new dominance in the field of industrial organisation. The network paradigm is distinguished from both 'markets' and 'hierarchies' (Cooke and Morgan, 1993:544). Nevertheless, the network

³ Clegg sees power as relational and situational. This relational concept of power, which follows the line established by Machavelli and developed by Foucault, invokes a highly dynamic image of the development of organisational fields, driven by forces of both change and stabilisation (Lagendijk and Cornford, 2000:211). Some of the literature in the fields of the sociology of science and technology (Callon, 1991; Latour, 1993; Law, 1991) and development sociology (Long and Long, 1992) are useful in considering the issues of power in network formation.

⁴ According to Cooke and Morgan (1993:562), a paradigm is 'a hegemonic set of principles, methods of understanding, and practices which provide a coherent and useful way of engaging with the world'.

paradigm can by no means be characterised as a distinct school of thought or body of theory.⁵

As is shown below in Chapter 3, many of the territorial innovation models use the network concept as a key element of their conceptual frameworks. The industrial district literature, the new industrial spaces literature (e.g. Storper and Scott, 1995; Saxenian, 1994), and the learning region concept all use a network approach (Florida, 1995; Storper, 1995; 1997; Morgan, 1997; Simmie, 1997; Malmberg and Maskell, 1999; OECD 2001 a). In particular, in regional development policy literature, there is a growing emphasis on networking (see, Markusen, 1999).⁶

According to Grabher (1993), a generic form of exchange called a ‘network’ can be identified; it has the following four basic features: (1) reciprocity; (2) interdependence; (3) loose coupling; and (4) power. In organisational studies, the need for innovation is frequently cited as a major reason for the emergence of “network forms of organisation” (see Knights et al., 1993; Robertson et al., 2001).⁷

⁵ Yeung (1994:483) provides a useful summary of the approaches taken by geographers in the study of business organisations, arguing that the network approach stands as a “realistic alternative to the prevailing macroeconomic interpretations of contemporary change in the capitalist global economy”. Murdoch posits that the analysis of networks has to be placed firmly so as to pose the *processual* and *descriptive* questions rather than the *structural* (Murdoch, 1997a:732). Rather than regarding action and process as the *consequence* of macro structural determination, it is more appropriate, he argues, to see structural change as the *outcome* of a range of complex social processes (Murdoch, 1997a: 732). See also Murdoch 1997b.

⁶ Markusen argues that “in most regional accounts, networks are presented and extolled without examining the motivations of participants, mapping who might be included and excluded, analysing unequal power relationships among members, or gauging the durability or fragility of relationships” (Markusen, 1999:878).

⁷ The review of literature in innovation studies shows that networks are at first instance introduced as intermediate organisational forms between markets and firms, when both of these fail in efficiency and efficacy. In particular trust (reliability on technical features and timing), demand or supply specificity and possibilities for co-operation are the basis of a choice for supplier-producer and buyer-subcontractor network relationships such as extended family networks or cooperative networks (Moulaert and Sekia, 2003: 298). Many of the different forms and practices of networks leading to innovation are recognised: supplier-user networks; networks of pioneers and adopters within the same industry; regional inter-industrial networks; international strategic technological alliances in new technologies; and professional inter-organisational networks that develop and promote a new technology (DeBresson and Amesse, 1991:363).

There is a strong emphasis on the role of partnerships and networks operating at various levels of social organisation including “interpersonal networking, inter-organisational negotiation and co-ordination, and inter-systematic partnerships bringing together representatives of different but interdependent institutional orders” (Jessop, 1997). Some social networks have value, because of the trust, reciprocity, information and co-operation that flow from them (Morgan, 2002:66). There is always a particularistic potential in networks. Some networks generate trust and circulate information beyond groups. Others give its members privileged access to resources at the expense of the larger society.⁸

Recent studies have revealed that, because of the importance of tacit knowledge and “learning by doing” (Johnson, 1995:23) within and between organisations, networking “both within and outside organisations becomes a more important part of the learning process” (Sharp, 2001:240). In the light of this, networking can be seen as a process of institutionalisation within and between organisations. *Actors*, either individually or collectively, may be able to pursue different types of networking and alliance strategy and modify the selection of their social, geographical and institutional constraints and opportunities. The strategic selectivity of institutions to network is determined by the wider *structure* in which they are located, and the selection processes are always and inevitably specific to a given time and space.

This has introduced the concepts of networks and networking which are fundamental to the research design of this thesis. This brings in another strand of the literature, which is considered below.

⁸ Networks of relationships constitute a valuable resource, providing their members with “the collectivity-owned capital, a ‘credential’ which entitles them to credit in the various senses of the word” (Bourdieu, 1986: 249).

The Strategic-Relational-Approach to Networks

One of the most useful perspectives on networks is provided by the political scientist already referred to many times, Colin Hay. He proposes “a minimal and inclusive” definition of networks. For him,

Networks... are *strategic alliances forged around a common agenda* (however contested, however dynamic) of *mutual advantage through collective action* (Hay, 1998:38; original emphasis).

Based on this operational definition of the network concept, Hay develops the theoretical framework proposed by Jessop as a way of transcending the limitation of existing network analysis. Applying the strategic-relational approach, he seeks to “locate networks within a broader account of the embeddedness of strategic social actors within contexts” (Hay, 1998:36). He stresses the dynamism of networks and the necessity of a longitudinal study of their development, which pays particular attention to their formation and any termination.

Network analysis is said to be one method of conceptualising individuals and organisations that captures “the intersection of both static and dynamic aspects of organisations by focusing on the linkages between social objects over time” (Tichy et al. 1979:508). However, Hay points out that too much of the work in network analysis has adopted a *static* analysis at the expense of considering the “*process and practice of networking*” (Hay, 1998:34-5; original emphasis). Hay contends that it is important for researchers to “give due consideration to the *generation, realization, adaptation, transformation and evolution* of strategic agendas, interests and actions within shifting strategic contexts” rather than to take a mere “snapshot” of a network at a particular time (Hay, 1998:42 emphasis added). Therefore, what is needed is a *dynamic* approach.

But Hay emphasises that it is crucial not to “conflate the *rhetoric and reality* of networking” (1998:36 emphasis added).

We must...retain a clear distinction between *network discourse* on the one hand, and the practices and procedures that characterize what might be termed *actually-existing networks* (i.e. those forms of organization and modes of governance referred to as ‘networks’) on the other (Hay, 1998:37; original emphasis).

The distinction between ‘networking’ as *rhetoric* (or discourse or talk, including this as a topic of research) and as *reality* (or practices and procedures, and as existing forms of organisations) is an important point in conducting empirical research taken on board in the research design adopted in this thesis.

As mentioned already, the concepts of *strategy* and *strategic selectivity* of contexts provide the central core of the strategic-relational approach. It is this approach that underpins the network analysis to be employed as the analytical framework of this thesis. The core of this framework can be summarised as follows:

- Actors/agents, both individual and collective, are conceptualised as conscious, reflexive and strategic;
- Strategic actors engage in *strategic learning* enhancing their awareness of structures and the constraints/ opportunities these impose;
- Both actors, their strategies and structural constraints/opportunities are always in the process of change;
- Different actors in similar material circumstances (through different experiences and influences) will construct their interests and preferences differently, in a way which is specific to the given time and space;
- Networks, seen as *strategic alliances forged around a common agenda* between actors, are institutional, geographical and historical processes.

As was argued earlier, the theoretical strength of the SRA is to overcome the structure-agency dilemma providing a broad theoretical framework to analyse the dynamics of selectivity of institutions in relation to the reflective choices of actors. In this line of thinking, networking can be conceived as “a strategic alliance” (Hay, 1998:38) by strategic agents involved in a search for resources, knowledge and information to pursue

their strategies and interests in a strategically selective context. Following SRA thinking, the understanding of the dynamics of network formation and evolution can benefit from an appreciation of the broader context as well as the specificities of an organisational field.

In this respect, strategic actions influence *both the structures and the actors* in the dialectical processes of change. None of them remain unchanged. This conception is different from conventional social network theory in which an isolated actor, pursuing his/her presumed interests, engages in ‘networking strategies’. The SRA acknowledges that structure and actors are interdependent and transform each other. From the perspective of individuals and organisations, they choose network ‘partners’ from strategically selective contexts, comprised of various factors relevant to their ability to pursue desired strategies and interests.

From the perspective of an organisation seeking to decide upon potential network partners, *the strategically selective context* represents the choices as follows:

- (i) the choice to network or not to network;
- (ii) the choice between potential network partners;
- (iii) the choice of what to network about; and
- (iv) the choice of how much organisational ‘sovereignty’ to risk pooling in the network and so forth (Hay, 1998:45).

In considering the real processes and practices of networks, some authors draw attention to the “role of power and its relationship to networks and knowledge” (Knights et al., 1993:982). Networking can be interpreted as an expression of power / knowledge relations. For example, Dicken and Thrift (1992:279) believe that the organisation of production chains and production systems should now be considered as a vast and

complex network of *power relationships* (see Murdoch, 1997a: 742). A key question is what drives institutional actors and their interactions with other actors in a specific context. In the context of innovation networks and institutions, Pratt (1997) draws attention to how different agents (entities such as individuals, firms, development agencies, locales, or assemblies of entities) are constantly engaged in a process of remaking themselves, and attempting to enrol in a network and being enrolled through delegated tasks.

Thus, networks need to be seen as constantly under construction, not ready made, and they are not neutral but contain a complex of power relations (Pratt, 1997:132). As Vickers and North (2000: 303) put it, of key interest are both how a variety of agents are enrolled into participating in networks, and the means by which individual agents/institutions seek to achieve strategic positions within these networks in the evolving organisational field. Hence, networks have to be analysed in terms of the specific conditions of the particular organisational field taking account of the three dimensions of the “circuits of power” as pointed out by Clegg (see p.35).

It is pointed out that local actors need to be seen in the context of the influence of the broader social and economic structures of power and interests such as those evident in wider national and European policy contexts (Vickers and North, 2000:303).

Hence, another important element to be considered in analysing the forms and practices of real and existing networks is that of geography. There is a strong emphasis on the role of networks operating at various levels of social organisation including interpersonal, inter-organisational negotiation and co-ordination, and inter-systematic partnerships (Jessop, 1997). In this light, institutions can be seen as “geographical accomplishments” (Philo and Parr, 2000:518) located within the power geometry (Massey, 1993: 61) associated with different ways of organising and institutionalising

social interaction (Massey, 1995).⁹ Attention has always to be drawn to the specific contexts in which concrete actors and their relations/interactions are evolving into the spatial institutional complexes embedded in their specific time and space.

2-2 RESEARCH SETTING AND RESEARCH DESIGN

Two Policy Research Areas

As mentioned earlier, this study focuses on the intersection between two areas of policy research - higher education policy research and regional development policy research.¹⁰ In order to investigate the role of universities in regional development processes, which seems to be emerging on both local, national and international policy agendas, this study combines the expertise in the two research areas, with close examination of the public policy agenda and the responses of institutional actors.

Higher education policy research is not a disciplinary area of study in the classical sense, comprised of researchers individually from history, sociology, economics, philosophy, psychology, or political science. It is a multi-disciplinary endeavour, held together by scholars from numerous disciplinary backgrounds with a common interest in the history, development and future of higher education (Meek,

⁹ According to Massey (1993:61), the power-geometry of time-space compression concerns power in relation to the flows and the movement. Different social groups and different individuals are placed in very distinct ways in relation to these flows and interconnections.

¹⁰ Hakim (2000:3) distinguishes 'theoretical research' and 'policy research'. Policy research encompasses a variety of research including theoretical research in many cases; descriptive research, which maps out the landscape of a topic, issue or problem; and studies to monitor how existing policy is working, extending to formal evaluation research. Policy research is typically *multi-disciplinary* or *trans-disciplinary* (Gibbons et al., 1994:168) and is rarely anchored to a single discipline (Hakim, 2000:5). There has been a recent discussion about the relationship between policy and research, and the role of social science has been highlighted. For example, The UK White Paper on *Modernising government* makes it clear that policy decisions should be based on sound evidence, and this includes evidence from social science (e.g. Blunkett, 2000). One of the interesting arguments can be found in the recent discussion on 'evidenced-based policy and practice' (Davies, et al, 2000). During the past few years there has been a surge of interest in the theory and practice of 'evidenced-based policy' both in the academic community and among policy makers. However, as Amann (2000) points out, the relationship between the production of knowledge and research evidence on the one hand, and policy and practice, on the other, is not a simple nor straight forward one. The production of knowledge is a non-linear process, and is closely inter-linked with user perspectives (Amann, 2000:vi).

2000:3). There is a world-wide network of higher education policy researchers, with some international professional organisations also involved.¹¹

According to Meek (2000:25), higher education policy research is not so much about particular policy per se, but rather focuses on the “outcome of the interactions” of the major policy actors: government institutions, government bureaucrats, university managers, academics, professions, learned associations, students, community lobby groups, and so on. Meek (2000) argues, in his review of higher education policy research, that:

...while recognising the importance of public policy, the *object* of study is....institutions and their *response* to public policy/government actions. I think this distinction is particularly important in an increasingly deregulated and complex world where institutions have mounting discretion as to their response to government policy initiatives (Meek, 2000:4-5 original emphasis).

In the field of higher education policy, the different roles and functions ascribed to the higher education institutions are becoming highly complex, and the universities will need to share more effectively some of their key functions with other institutions in society (Meek, 2000:23).

Research cannot identify any one best way to co-ordinate, fund, govern or manage either higher education systems or institutions....But research can identify policy weaknesses and the unintended consequences of policy implementation, helping to better inform the planning processes at both the system and institutional levels through the rigorous collection of data and their analysis (Meek, 2000:25).

¹¹ Formalised in such organisations as the Consortium of Higher Education Researchers (CHER). There are other professional organisations that draw membership from both researchers and practitioners, such as European Association for Institutional Research (EAIR), the Society for Research into Higher Education (SRHE) and the Association for the Study of Higher Education (ASHE) (Meek, 2000:2). The OECD programme on Institutional Management in Higher Education (IMHE) is a membership forum serving policy-makers in national and regional authorities, managers of higher education institutions, and researchers. <http://www.oecd.org/EN/about/0,,EN-about-610-nodirectorate-no-no-no-4,00.html> access date 29/09/02.

It is important for researchers to map out the different functions of a university and to identify the areas to which a university can contribute in collaboration with other stakeholders in society.

In terms of the universities' role in their respective regions, a review of different theoretical perspectives in higher education policy research literature indicates that little of this literature is concerned with the theoretical examination of each university's contribution to its region particularly in the context of the emerging knowledge-based economy. Initial survey suggests that higher education policy research literature lacks deeper theorisation of the causal mechanism of each university's organisational change in terms of its territorial dimension. This is the area in which the expertise of regional economic policy research can be drawn in.

Research into regional development policy is also multi-disciplinary in nature, consisting of researchers in industrial economics, economic geography, institutional economics, labour market studies, urban planning and regional science. The researchers are characterised by particular interests in the local and regional development agenda, with extensive interaction with actors at local, national and international levels that would include local authorities, local communities, non-governmental organisations, firms, business support organisations, educational and training organisations, trade unions, regional agencies, central government, and trans-national bodies such as the European Commission.¹²

¹² There are several professional bodies serving the interests of this research community. For example, the Regional Studies Association was established in 1965 to provide a forum for the debate on regional development, policy and research. In its early days the Association was primarily interested in the UK experience but this subsequently widened to include a specific US focus and now a strong interest in European and wider experience. <http://www.regional-studies-assoc.ac.uk/overview.html> access date 28/09/02. The Regional Science Association, established in 1954, provides intellectual leadership in the study of those social, economic, political and behavioural phenomena which have a spatial dimension. Consequently, this Association brings together scholars from a large number of fields, including economics, geography, urban and regional planning, civil engineering, sociology, finance and political

As shown in Chapter 3, recent theoretical research on the territorial dimension of economic and technological development has drawn attention to ‘localised learning’ (Lorenzen, 2001), regional processes of “collective learning”(Camagni, 1991:130; Keeble et al., 1998: 330) and ‘regional innovation systems’ (Cooke 1998) with an institutional focus. In these areas of literature, authors such as Markusen (1999) and Martin (2001) have raised questions with regard to the relationship between academic research and policy relevance.

From the point of view of economic geography, Martin (2001) addresses the question concerning the relationship between research and public policy: “what kind of geography for what kind of public policy?”

It is not just a question of what sort of policy, but also how geography contributes to the policy process. The importance of a geographical perspective on policy arises in several ways...Most policies..., even those which involve spatially decentralized systems of delivery, implementation, intervention or regulation, rarely take local impacts into account, ...by ignoring regional and local differences in socio-economic structures and conditions, national, international and supranational policies often work to intensify geographical inequalities in economic development, social welfare and environmental quality (Martin, 2001:203).

In short, the local context matters in the formation and practice of policy. As part of the so-called ‘hollowing out’ of nation states, the spaces of political regulation, governance

science. Members are found in academic institutions, government, consulting organizations and a variety of private firms. <http://rsai.geography.ohio-state.edu/rsai/HomePage.htm> access date 18/05/03.

In relation to international policy communities, the European Commission, notably the Regional Policy Directorate-General and Enterprise Directorate-General, is concerned with regional development policies and issues of regional competitiveness. The Research Directorate-General is also concerned with the regional dimensions of European research. http://europa.eu.int/comm/dgs/regional_policy/index_en.htm
http://europa.eu.int/comm/dgs/enterprise/index_en.htm
http://europa.eu.int/comm/dgs/research/index_en.html access date 18/05/03.

Another international organisation which plays a significant role in disseminating ideas and practices concerning regional development is the Organisation for Economic Co-operation and Development (OECD). For example, OECD’s programme on Local Economic and Employment Development (LEED) specialises in identifying, analysing and disseminating ‘innovative ideas relating to local development, employment and the social economy’. <http://www.oecd.org/EN/about/0,,EN-about-545-nodirectorate-no-no-no-23,00.html> access date 29/09/02. These research and policy organisations function as channels through which knowledge flows and the organisational fields are formed.

and intervention are becoming at once both more global *and* more local. On the one hand, central state policy measures, programmes and apparatus are being decentralised. On the other hand, there is a surge of local ‘bottom-up’ policy initiatives and institutions. The “complex spatially nested institutional arrangement” (Martin, 2001:204) needs to be studied in relation to the formation and implementation of public policy. Therefore, each area of policy research needs to look at the interactions and the outcome of those interactions between policies and policy actors including various public and private organisations which comprise each organizational field.

The Strategic-Relational-Approach to HE Network Formation in the Regions

To recap by way of introduction, the SRA to networks allows for an evolutionary approach providing a broader context to analyse the relationship between universities and their regions. Strategic actions influence *both the structures and the actors* in dialectical processes of change. The dialectical relationship between the structural context and the actor in the context yields a new inter-related conceptual pairing: *a strategic actor within a strategically selective context* (as in Figure 2.1, p.31). There always is an interaction between structural and agency factors. Whilst the conceptual analysis starts with distinguishing core elements in both categories, the analysis immediately seeks to reveal the relational aspects that link structure and agency and vice versa (see Lagendijk, 2002:61).

In the context of this particular thesis, the SRA to networks allows for an evolutionary approach providing a broader context to analyse the relationships between universities and their regions. The structural factors of networks include: the genealogy of organisations (e.g. universities and regional agencies), an account of the recent history of the sectors (e.g. higher education and regional development), and the political economy in which efforts to build social networks are embedded. There are also more

agency oriented factors to consider such as the roles played by particular individuals in the organisations, links between agents, and the awareness of the opportunities perceived by agents to form and develop networks (see Knights et al., 1993:980).

To repeat (see p. 29-30 above), *structure* basically means context and refers to the setting within which social, political and economic events occur and acquire meaning with some regularity or structure over time. *Agency* refers to action, in particular human and social conduct. It can be defined as “the ability or capacity of an actor to act consciously and, in so doing, to attempt to realise his or her intentions” (Hay, 2002:94). The structural and agency factors are identified in the following chapters. The links between structural and agency factors through strategic contexts and strategic actions are also clarified where necessary. In the light of the SRA proposed by Jessop (2001) and developed by Hay (1998; 2002), universities can be seen as one of the groups of strategic actors within the region, which is a strategically selective context for the strategic actors, whereby they form networks and partnerships defined as strategic alliances. The strategic actions within the strategically selective context comprise a new strategic organisational field.

Research Design and Three Levels of Analysis

The nature of the research design used in the thesis has been developmental rather than pre-determined at an early stage. After the first phase of extensive literature review and preliminary field research, the research moved to a phase where qualitative research methods (Creswell, 1994; Flick, 2002) were extensively employed in the form of fieldwork combined with some elements of case study research using the methods following Yin (1994).¹³ There are three levels of spatial analysis in this study, namely,

¹³ Rather than treating discreet and bounded cases separately, the approach this thesis takes is to put the cases in context. The University of Birmingham (see Chapter 6) can be called a case study of one university, but it is analysed in relation to the other 12 HEIs in the West Midlands Region, or to other

institutional, regional, and national/cross-regional. At each level, the focus of the analysis is the organisational field where interactive strategic actors forming networks position themselves strategically in relation to the wider structure in which they are embedded. The three levels are considered in turn (see above, p.22-4).

The central focus of this thesis is the emerging interface between universities and their regions. There are three structural factors at work which influence this process. First, there are mainly the national policy instruments promoting universities to work closely with industry and communities. It is important to note that the so-called third stream activities of universities which have been promoted by UK central government have encouraged the formation of a new *regionality* of universities. The second structural factor includes the European Union's programme as introduced in the regions which has worked as a catalyst for the regional private and public players, including the universities, to work together for the first time under the broad banner of innovation. The third factor is the political process of devolution currently occurring in the regions in the UK (see Chapter 5, p.143-4).

2-3 RESEARCH METHODOLOGY

Sources of Information

The material used in the thesis has been drawn together from a number of sources, including official policy documents, press releases and secondary and online material. Fieldwork has provided primary data which were mostly gained through conducting interviews. The empirical material of the thesis was assembled over the period between October 2000 and July 2003.¹⁴ A number of public documents were consulted

universities in the UK. The West Midlands Region comprises a regional case study, which is put into perspective with other eight English regions (in Chapters 7 and 8).

¹⁴ The final participant observation took place as late as October 2003 at a conference in the West Midlands Region on HEIF 2 funding consultation. The main period covered in this study occurred before

throughout the research. These include the government's white papers, green papers, and government related publication of policy documents, consultation papers, and strategic documents. Information at regional level was drawn from recent strategic documents published by regional development agencies. Information was gained through their web-sites, event flyers, and hard copies of strategic documents. With regard to institutional documentation of universities and consortia of universities, their web-sites, official documents, and brochures were the main sources of information. As mentioned in Chapter 1, as well as investigating the institutional changes at present (broadly from the election of the Labour Government in 1997 to 2003), the study aims to provide at least brief historical accounts of the social relationships of the institutional actors. Especially, historical archives were employed to investigate the institutional history of the University of Birmingham. The regional account of institutional collaboration has been supplemented by both recent local newspapers and historical archives where possible.

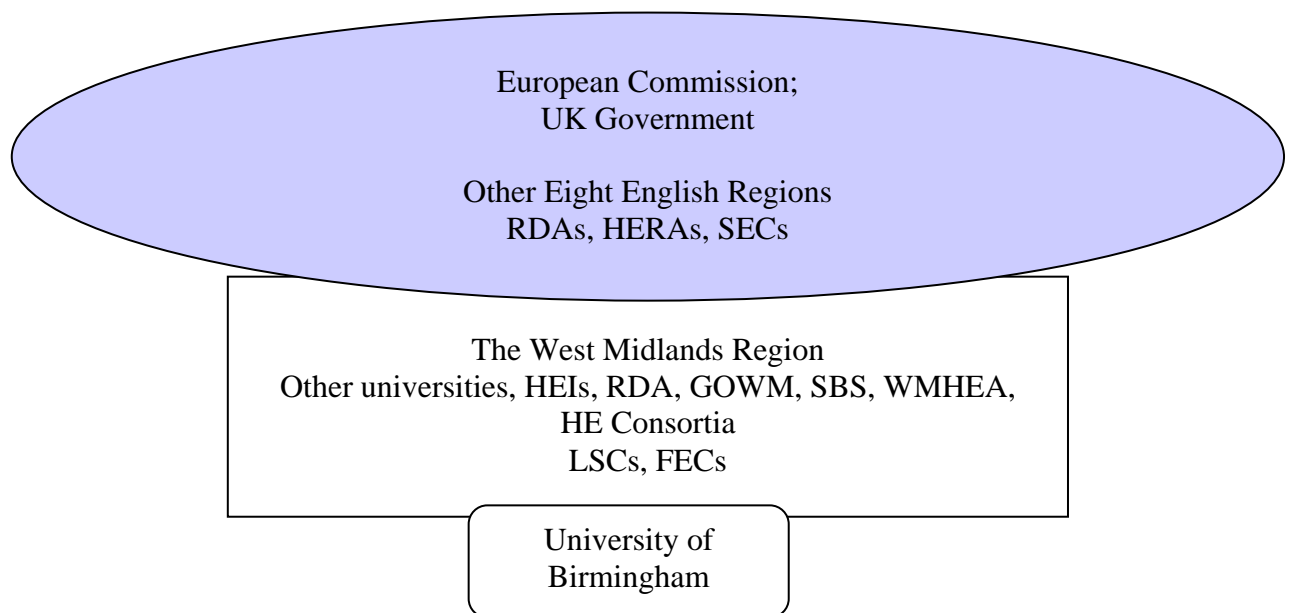
One of the principal difficulties of undertaking the research into the aforementioned two policy research areas is the fact that the both the policies and institutional settings of higher education and regional development in the UK have been constantly developing and changing. At the beginning of the research, the knowledge of the researcher about both the UK higher education system and English regions was very limited. There were no personal contacts in the research field prior to the advent of the preliminary research in the summer of 2000. The fieldwork involved a process of making contacts, and networking with interviewees. The fieldwork constituted an institutionalisation process for the researcher.

the introduction of the permanent third stream funding in 2005/6. See Chapter 4 for discussion about the government initiatives.

The main methods employed during the fieldwork have been: interviews, social networking and participant observation, as depicted below. The fieldwork started at a micro-level and then moved to the meso and macro level. The fieldwork began within the University of Birmingham as a site of research (and PhD registration) with a natural extension to other universities in the West Midlands Region, in which the University of Birmingham is located. The fieldwork unfolded the institutional processes of networking and the organisational boundaries of knowledge production. It was the aim of the research to reveal the perceptions of institutional actors in coping with the changes in their institutional settings, and in the interpretation of policies which influenced their positioning in the settings. Therefore interviews were conducted as part of the fieldwork in order to reveal the institutional processes and perceptions of individual actors.

In October 2001, the researcher decided to take a cross-regional comparative perspective, to put the West Midlands case into context, and the scope of the research was broadened in terms of the geographical scale to cover all nine English regions. In obtaining a broader perspective to understand the development of networks between universities and their regions, the wider comparative perspective covering the nine regions was useful. The amount of information and the extent of analysis in the eight English regions outside the West Midlands are almost inevitably not the same as that of the West Midlands Region. The systematic cross-regional comparative perspective was possible through interviews with the nine secretariats of the Higher Education Regional Associations (HERAs) in England. Out of the nine secretariats with which contacts were made, interviews were conducted with all but one. Figure 2.2 indicates the conceptual frameworks for conducting the fieldwork in the three organisational fields at different spatial levels.

Figure 2.2 Conceptual Frameworks for Conducting Fieldwork in Organisational Fields at Different Spatial Levels



Conducting the Interviews

The interviews took place between October 2000 and June 2003. In the initial stage, the key role was played by some ‘nodal persons’ at the University of Birmingham who acted as gate-keepers to give the initial contacts not only in the University but also in the West Midlands Region. In the initial stage, the interviews were preliminary in nature, and the purpose was to collect background information rather than targeted information. At this stage, the selection of the interviewees was through personal contacts and social networks. These early contacts were crucial to understanding the webs of existing networks in the Region, and the interviewees were contacted as ‘snowballing’ from one person to the other. As explained below, participating in regional events was another way of finding interviewees or informants in a more general sense.

Except in the very early stage of interviewing, a list of questions was sent to the interviewees in advance. The length of the interview varied between about 30 minutes and 2.5 hours. Most of the interviews were on a one to one basis, but, sometimes, there were two interviewees present. The interviews in later stages were tape-recorded.¹⁵

Interviews within the University and in the Region were conducted at the same time (from October 2000 to June 2003; mostly done by December 2002). By the end of the first year, the interviews had clearer focus and interviewees were strategically targeted. The targeted interviewees at the University of Birmingham included: senior management, senior administrators, those staff involved in third stream activities and, academics with engagement in regional agendas and businesses (see Appendix 2.1).

¹⁵ Some of the interviews were recoded by hand-written notes and typed within the same day. Most of the interviews tape-recorded were transcribed, but sometimes it was found difficult to reproduce the exact wording of the interviewees. Interview results presented in later chapters (6-8) as ‘based on notes taken from the interview’ implies that minor modifications were made based on the record. This applies to both hand-written notes and tape-recorded transcriptions.

Within the West Midlands Region, there are three groups of targeted interviewees. The first group of interviewees belongs to regional consortiums of higher education of some form (e.g. WMHEA, HEFCE funded consortium such as CONTACT, MIE, Mercia Spinner, MEDICI, and those funded by European funding) (for acronyms see Glossary). The second group consists of staff of universities and other higher education institutions (HEIs) in the Region. These included senior management, business development officers and widening participation officers. The third group can be categorised as ‘regional stakeholders’ in relation to universities. These included people from organisations such as the Government Office in the West Midlands (GOWM), the RDA, Advantage West Midlands (AWM), West Midlands in Europe, Birmingham City Council, Business Links/Small Business Service (SBS), Learning and Skills Councils (LSCs), managers of science parks in the Region, and the HEFCE regional consultant in the West Midlands Region. For the comprehensive list of interviewees, see Appendix 2.1(P.404).

Throughout the process of interviewing in the first six months, questions were becoming more standardised depending on the remits of interviewees (see Appendix 2.2, p. 410-13 for the samples of list of questions). Hence, the interviews became semi-structured and more comparable. Some of the interviewees were contacted more than once, and the interviews became more focused in nature.

Most of the interviews were conducted face to face but, in the case of the interviews with the secretariat of HERAs, some of the interviews were done over the telephone (see Appendix 2.1, p.409 for the detail of the interview methods). The interviews with the HERAs secretariat were much more structured, and the principal purpose was to compare the different structures of their regional networks (see Appendix 2.2, p.412 for sample of list of questions).

Table 2.1 below summarises the number of interviews conducted in each category.¹⁶

Table 2.1 Categories and Numbers of Interviewees

	Number of interviewees at individual HEIs	Number of interviewees outside HEIs	Total
University of Birmingham	42	-----	42
The West Midlands Region excluding U of Birmingham	43	18	61
Other Regions/private sector, International	4	20	24
Total	89	38	127

Participant Observation

Another important channel of information gathering was through events such as conferences, seminars and other related events.¹⁷ Some of the national policy conferences organised by organisations such as Universities UK and the Funding Council were opportunities to meet delegates from universities nationwide who work with a similar agenda. These generated the opportunities to meet practitioners as well as researchers at a national scale. See Appendix 2.3 (p.415) for the list of the conferences attended as part of the research.

There were also many regional conferences and seminars throughout the period of the research. The researcher attended many events in the West Midlands, some of which were funded by the European Commission and more European than regional in

¹⁶ There were some non-responding interviewees and most of the cases, these were substituted by somebody else, either by a face to face interview, telephone interview or e-mail correspondence.

¹⁷ As mentioned already, the other participatory insights were gained from the work experience at the OECD, with the Programme on Institutional Management in Higher Education (IMHE). The researcher had a work placement as a trainee with the Programme for four months (March to June 2002) during the time of the research, which provided many useful insights and networks in the sector. This also provided some international perspectives on the management issues of universities as well as personal contacts with international experts in the area of the research topic.

nature. The researcher also attended several conferences held at a regional or sub-regional level in other regions. Those regional events provided opportunities for participatory observation to understand the regional (or sub-regional) agenda and issues, and the way networking is promoted.¹⁸

Theory, Data and Evidence

Rather than seeing theory as a means of modelling a complex external reality with testable hypotheses, or of drawing predictive inferences on the basis of observed regularities, this study follows Hay in seeing theory as:

... a guide to empirical exploration, a means of reflecting more or less abstractly upon complex processes of institutional evolution and transformation in order to highlight key periods or phases of change which warrant closer empirical scrutiny. Theory sensitises the analyst to the causal processes being elucidated, selecting from the rich complexity of events the underlying mechanisms and processes of change (Hay, 2002:47).

This study seeks to capture and reflect the complexity and open-endedness of processes of social change. The rules of the social world are subject to constant reproduction, renewal and transformation, and they are culturally, spatially and historically specific. As Giddens puts it, whereas theories in the natural sciences are separate from their subject matter, in the social sciences, “theories have helped to constitute what they interpret or explicate” (Giddens, 1984:xxxv). At the same time, theories can be informed by evidence.

¹⁸ Although participatory observation has added some insights to the researcher, it was decided that the thesis should not to take the form of ethnographic research presentation. Instead, the presentation of the thesis follows the theoretical guidance as depicted above.

This study commits social analysis by way of “a *dialogue* between theory and evidence”, where the role of the analyst is to piece together “a rich and *theoretically informed* historical narrative”. Such historical narratives seek to preserve and capture the complexity and specificity of the process of change under consideration, examining the interplay of actors, ideas and institutions and establishing the conditions of existence of the mechanisms of evolution and transformation described (Hay, 2002:47; original emphasis). Such an approach pays particularly close attention to the specificity of sequence and timing in the precise context under consideration in preference to providing more abstract and generic explanations or scientific predictions. It is through a robust methodology that the social analyst may reconstitute the realm of “the possible, the feasible and the desirable” (Hay, 2002:87) of the social world of which she is part.

The Nature and Limits of Research Methods

The question of the role of the researcher and the positionality of the analyst is recognised and it is worth mentioning here. Ontological claims outlined above concerning the nature and role for theory in the social sciences as opposed to the natural and physical sciences bring several epistemological questions about the claims to knowledge made by a social analyst. Questions can be raised such as: if the analyst can legitimately claim no privileged access to knowledge what implications does this have for the claims that the analyst makes about the social world?; on what ground should one adjudicate between the variety of mutually incompatible accounts generated by a variety of differently located social participants?

The analysis of social processes is conduct which is itself inherently socially contested between alternative and competing narratives and interpretations in a wider context. In the light of this, the fieldwork was a process of ongoing dialogues between

the researcher and the social world, and of engaging with theory as well as articulating relationships and networks as part of the organisational fields.

For example, the interviewer and interviewee need to establish an inter-subjective understanding (May, 2001:127). In particular, the focused interview rests its strength upon eliciting answers which are, as far as possible, in the interviewee's own words and frame of reference (May, 2001:129). The establishment of rapport in focused interviews is of paramount importance given that the method itself is designed to elicit understanding of the interviewee's perspectives. In this study, the nature of interviews is mostly semi-structured but, as has been mentioned, those in the early stage of the research were much less structured than those conducted in the later stage. The interview techniques developed throughout the research experience, and greater rapport has been established over the three years.¹⁹ In order to check the reliability of research techniques, interview results were cross-checked with other sources of data by way of triangulation (see Foster, 1996:90-1).

In conducting any interviews, there is the general question of the interviewer's role: what effect is the interviewer having on the interviewees and the type of information collected? The characteristics of the interviewer in terms of age, gender, race and accent may affect the interview (May, 2001:128). The researcher is not British, but a Japanese, enrolled in a degree course at a British university, and came from a very different cultural, social and educational background from the research site. Student status also allowed some accessibility to events and interview opportunities. The fact that the researcher came from a different cultural background sometimes turned out to

¹⁹ Many interviewees were just newly appointed when the research started in October 2000 and a number of them accepted follow-up interviews after a year or so. The researcher collected information from them by attending the same events on various occasions.

be useful in exploring the cultural values of British higher education and regional and social issues.

The research topic is an ongoing, and rapidly developing policy research area. Whilst efforts were made to include historical backgrounds, given the limited time of research and space of the thesis, the coverage is limited. This thesis, therefore, has to be seen as part of the wider institutional landscape throughout time rather than as an independent and self-existent piece of work.

CONCLUSION

As the theory which guides this study, the strategic-relational approach (SRA) to institutions gives a broad and abstract perspective and framework to investigate institutional changes in relation to wide structures including national policy mechanisms and the global political economy.

The SRA to networks developed by Hay (1998) is useful in shedding light on the interdependence between structure and agency. Networking can be seen as a process of institutionalisation *within* and *between* organisations. *Actors*, both individually and collectively, may be able to pursue different types of networking and alliance strategy and modify the selection of their social, geographical and institutional constraints and opportunities. The strategic selectivity of institutions is determined by the wider *structure* in which they are located, and the selection processes are always and inevitably specific to the given time and space.

One of the principal messages from a methodological perspective in the SRA to networks is that clear distinction needs to be made between *networks* as *rhetoric* or *discourse* on the one hand, and the practices and procedures that characterize what might be termed *actually-existing networks* (i.e. those forms of organization and modes

of governance referred to as ‘networks’) on the other (Hay, 1998:37; original emphasis). Networks as discourses exist as a research topic for social scientists, as well as policy discourses for policy makers.

The research design underlines the structure of this thesis as indicated in Chapter 1. The range of network discourses in current thinking in regional development models are delineated in Chapter 3. The structural factors influencing the network formation are explained in Chapters 4 (higher education policy and structure) and 5 (regional development policies and structure). The real forms, mechanisms and processes of networks between universities and regional actors are examined through the data obtained through the fieldwork. The results are presented in Chapters 6-8.

Chapter 3

Models of Embedding Knowledge and Universities in Regional Development

INTRODUCTION

There is a growing significance attached to knowledge production at a regional level epitomised by the emergence of some of the successful high-tech regions in the world, often associated with the role played by universities. Universities are increasingly seen as regional assets and as the interface between the global and the regional economies as Chapter 1 suggested.

This chapter examines the existing theoretical models of regional development drawing from the regional development policy research literature to identify the model in which the role of universities can be most appropriately examined in relation to other actors in the organisational field of regional development. The chapter starts with the examination of the alleged link between globalisation of the economy and ‘regionalisation’ of knowledge production which is associated with the increased expectation/role of universities in their region.

Several existing models are reviewed in the light of the spatial issues of the role played by universities, and the one which explains the role of universities most appropriately is identified. There is a growing expectation that universities have roles as resources in the economic development process expressed in national government publications. Increasingly, similar expectations and aspirations can be found at regional level. However, although some of the case study literature (SQW, 1988; Keeble and Lawson, 1997) tries to formulate a comparative approach, the applicability of the

models of university-industry linkage found in some successful localities to other places is far from clear.

The growing acceptance that economic development has an important regional dimension has led to a shift in both the policy and academic paradigm. Social scientists have increasingly focused upon the significance of the region as a fundamental basis for economic organisation and development, highlighting its ‘untraded interdependencies’ (Storper, 1995; 1997) which constitute “region specific assets of production” (Diez, 2001:908). Significantly, these new territories of economic and political governance – and especially the sub-national region – are often viewed, and sometimes promoted, as a means of ‘pinning down’ or ‘embedding’ the increasingly global processes of economic development (Amin and Thrift, 1995; Storper, 1997 cited from Jones, 2001:285).

The first part of the chapter identifies five dimension of ‘regionalisation’ as found in policy and theoretical discourses. Secondly, the chapter critically examines the problems of conceptualising and empirically analysing the role of universities in regional development associated with the idea of ‘spatial proximity’, ‘clusters’ and ‘localised learning’ which allegedly lead to innovation and local economic development. Thirdly, following recent theoretical discussion linking the concepts of ‘regional innovation systems’ and ‘multi-level governance’ structure, the chapter identifies a framework to capture the role of universities in regional development, especially in the light of the multi-spatiality of university activities. The regional institutional process has to be located within national and international policy influences and the influence of the globalisation of economic activities.

3-1 GLOBALISATION, KNOWLEDGE, UNIVERSITIES, AND REGIONALISATION

Globalisation - Drivers and Conditions for Universities' Regional Engagement

It is argued in the literature that higher education is increasingly expected to work as an interface between the needs of the regionalised global economy and the globalising regional economy, by providing firms with labour with appropriate skills, knowledge and learning ability, and by providing appropriate technological supports (Goddard and Chatterton, 1999). In this context, universities are expected to provide a vital locational asset within the global economy (Goddard, 1999; Kanter, 1995).

The drivers for greater university engagement with regional development can be found in two places. First, there are the *push factors* found in the changing nature of higher education itself. In the past, higher education in most countries has been primarily funded by national governments to meet “national labour market needs for skilled manpower” and to provide “a capacity to meet national research and technological development needs” (Goddard, 1999:36). However, some of the changes mentioned already, such as the emergence of mass systems of higher education, meeting the needs of a larger and more diverse client population, and the pursuit of efficiency in public funding, have amongst others, challenged the predominance of this national model. Thus the privileged relationship between universities and the national system of knowledge production has been questioned. Consequently, there is now a greater concern to harness university education and research to specific economic and social objectives.

Regional needs emerge as one of the important items on the agenda for universities in such a context. These include lifelong learning needs created by changing patterns of skill demands in the labour market, declining public financial support for students leading to more attending their local universities, increased competition from

providers of education on a global scale, new ways of delivering education and training made possible by information and communication technologies (ICTs), and the changing nature of knowledge production and distribution, which is altering the monopolistic position of universities (Goddard and Chatterton, 1999:686).

The *pull factors* from the wider economy are found in the “emergence of new territorial development dynamics” (Goddard and Chatterton, 1999:686), and this emergence is the main concern of this chapter. The global changes in the nature of economic activities are provoking “a re-examination of cornerstone factors of production, investment and trade” (Acs and de la Mothe, 2000: 240). In the globalising knowledge-based economy, the growth of the knowledge-laden content of foreign direct investment (FDI) in the forms of R&D and international technology flows by multinational enterprises (MNEs) is recognised. There is also a move towards “endogenous views of growth” in which skills, learning, creativity, entrepreneurship, quality and other knowledge-based intangibles are seen as key (Acs and de la Mothe, 2000: 240).

Paradoxically, the globalisation of economic activities is a major factor explaining the increasing importance of localities in the spatial organisation of economic processes. As Goddard puts it, “fundamental shifts in the organisation of production and the related regulation of the economy reflected in the twin processes of globalisation and localisation” (Goddard, 1999:37) are taking place. Certain academic and policy circles argue for the ‘re-emergence of regional economies’ (Sabel, 1989), the ‘localization of the world economy’ (Krugman, 1991), and the rise of a ‘global mosaic of regional economies’ (Scott, 1998). Some authors think that the re-emergence of ‘the region’ is tied in with the supposed transition from Fordism to post-Fordism, through adopting the system of ‘flexible specialisation’ (Sabel, 1989).

What is Regionalisation?

As the above section mentioned, a common thread in the literature on the geographical dimension of globalisation is that globalisation processes are inherently associated with ‘regionalisation’ in *some form* (Sugden and Wilson, 2001:15), promoting greater regional economic distinctiveness. But different forms of regionalisation need to be distinguished and investigated further. What forms of regionalisation are observed, and what does they mean for policy makers and institutional players including universities?

First, regionalisation is observed in terms of policy formulation and delivery. There is a wider consensus than before that economic globalisation and the liberalisation of markets have rendered nation-states a less appropriate level at which to formulate and co-ordinate some economic policies (Webb and Collis, 2000). There seems to be increased competition between regions and cities over resources such as investment, skilled labour, markets and technological infrastructure (OECD, 2001b: 44). Ohmae (1995) points to the ‘end’ of nation-states, and describes ‘region states’ as powerful engines of development linked to the global economy, and regional economies rather than national economies are seen as the salient foci of wealth creation and world trade (Ohmae, 1995; Krugman, 1991; Storper, 1997).¹

In many countries a general shift of innovation and labour market policies can be observed from the national to the regional levels of decision-making. It is argued that, in the global economy, modern regions are far less subject to changing national policies, and the major linkage of regions tend to be with the global economy (Ohmae, 1993, 1995). The so-called ‘hollowing-out’ of the state (Jessop, 1990) has allegedly promoted

¹ Contrary to the emphasis on the growing importance at sub-national and regional levels, the significant roles are still played by national governments. Nation-states, or groupings of nation-states at international level, are still the principal decision-makers on the regulation of globalisation processes such as trade policies, investment policies and environmental policies (OECD, 2001b: 29).

the emergence of a new kind of regional policy, characterised by regulation and co-ordination based around inter-firm networks and public-private partnerships at the city and regional levels (see Jessop, 1998).

Secondly, regionalisation has to be seen as part of the devolution process moving towards a new territorial governance structure (see OECD 2001b). It is important to note that cities and regions as ‘actors’ have entered the debate on economic and social development and policy-making as a result of the devolution of some national economic power, and the emergence of regional governments and regional development agencies. This process has also been promoted by the emergence of trans-national institutions such as the European Union (EU). Thus the regional level is increasingly seen as the level that offers the “greatest prospect for devising governance structures” (Hassink, 2001:221) to foster learning in the knowledge economy (Lorenzen, 2001). Attention is paid below to the ways in which regionalisation of policies and governance affects institutional processes, in particular, networking as strategic alliances.

Thirdly, regionalisation combined with globalisation affects models of regional development which influence policy thinking. Regional policy has moved away from a top-down approach focusing on physical investment to a more bottom-up approach focused on supply-side measures (Lagendijk and Cornford, 2000:212) whilst a theoretical shift has occurred from the so-called exogenous model to the endogenous model of regional development.²

² This refers to the shift in policy thinking towards a new paradigm that can be referred to as the ‘endogenous development paradigm’. The 1980s saw inward investment as the main focus of the regional development agenda, mainly attracting jobs in the form of branch-plants. Inward investment still remains a main focus of many European regions, but the new emphasis is more on innovation and the exploitation of indigenous capacity, upgrading the technological capacity of existing small and medium sized enterprises (SMEs) and improvements in the regional skills base. Endogenous development, based on resources existing within the local area, contrasts with the ‘exogenous development model’, which is

Now some authors draw attention to the critical role of links to ‘non-local networks’ (Park and Markusen, 1995; Malecki, Oinas and Park, 1999:261). At first glance, the increasing trends to localised networks and international networks seem to be contradictory but, in fact, they can coexist with increasing globalisation. Therefore, regional policy makers have to make the right balance of endogenous and exogenous factors, for example, in designing policies for attracting and embedding foreign investment within local economic development (Potter et al., 2002: 303-5).

Fourthly, in the field of innovation studies, factors that promote innovation³ are increasingly associated with the trend of regionalisation. A potentially significant theoretical convergence seems to be underway between innovation studies, economic geography and other adjacent academic disciplines.⁴ The perception of innovation as a system is the central idea highlighting the dynamic social processes involved in the interactions of organisations and institutions. Freeman (1988), Lundvall (1995) and OECD (2001c) focus on the distinctive attributes and interactions of national innovation systems. The national innovation system comprises the set of institutional actors that together play the major role in influencing innovative performance (Nelson and Rosenberg, 1993:4).⁵ In the mid 1990s, the question emerged as to whether or not such a thing as *regional* innovation existed, let alone whether or not it was *systematic* (Cooke,

dependent on investment by external agents. The latter approach has been criticised for stimulating only weak connections between external investment and local firms and capabilities (OECD, 2001 b: 27).

Endogenous development strategies have stressed primarily the essential nature of local relations and the kinds of conditions that seem favourable for the functioning of local production and innovation networks. In practice, both models are pursued but external investment is limited for many areas.

³ Innovation is defined as both the creation and diffusion of new ideas.

⁴ The neo-Schumpeterian evolutionary school in innovation studies has opened up a connection with other cognate fields such as industrial organisation, economic sociology, regional studies and science and technology policy (Morgan, 1997:492-493).

⁵ At its broadest level, the national innovation systems idea is “a way of describing and analysing the set of institutions that generate and mould economic growth”, whereby national economic growth is explained by technological innovation as the key driving force (Nelson, 2000:11).

1998:3; original emphasis).⁶ Authors such as Braczyk et al. (1998) have examined how ‘innovation systems’ operate at the regional level through networking between different players within the region (see below p.76).

Fifthly, from a somewhat different perspective, an economist takes increasing interest in a regional level as the manifest differences in economic growth and levels of welfare between regions remain. Barro (1998) addresses the paradox of remaining regional disparities. Whilst neo-classical economic theories would suggest that different regions and territories may be expected to converge towards the same level of growth in the long run, what is observed is persistent differences in growth rates. There are marked economic disparities between regions and the convergence is slow and disparities remain at regional level whilst there is a tendency to convergence at national level (OECD, 2001 a: 21; 2001b: 28).

There are empirical grounds for the view that such regional differentials are becoming more significant, despite the wider context of the globalisation of economic activities. Barro explains that differences in growth rates are mainly dependent on the initial capital that territories benefit from, in terms of physical capital, human capital and financial capital and on how this capital is mobilised (OECD, 2001b: 28). Developing this argument further, it can be argued that the most successful regions may have many aspects of ‘initial capital’, such as an educational system, a technological system, and a communication system with its ‘social’ and ‘institutional’ dimensions underlined by the presence of innovative firms, institutional networks, high mobility of capital and labour and an entrepreneurial culture. In the light of this, the key question is: to what extent are the regional economic trajectories and remaining economic

⁶ Cooke et al. (1998: 1581) define regional innovation systems as “systems in which firms and other organisations [such as research institutes, universities, innovation support agencies, chambers of

disparities explicable in terms of the differences in institutional innovation capability and the processes of individual and organisational learning in regions? And, how can policies promote such institutional conditions?

Universities as Knowledge Institutions in the Region

Besides the globalisation of economic activities, the increasing importance of knowledge in advanced production has a particular relevance for understanding the emerging role of sub-national regions in modern economies, and challenges the prevailing notion about the social role of universities (Varga, 2000:139). It is also pointed out that corporate globalisation strategies are meaningful only if local, national and regional differences exist and can be harnessed on a global scale (Braczyk and Heidenreich, 1998). The challenge for the region, in turn, is to find ways in which the global economy can work locally. Such concerns are associated with the need to mobilise a large group of stakeholders, including universities as providers of knowledge.

In the light of this, the universities' role is to contribute to the regional economy by providing knowledge in the form of both local labour and technological support that enhance the development of the economy of the region, and by finding for the region an appropriate technological niche in the global economy. It is increasingly believed that investment in both scientific research and in higher education has become a key factor in international competitiveness in the knowledge economy, in the shape of both "basic science and commercial patents" and "human capital" in the form of highly skilled workforces (Scott, 1998:111).

Charles (2002:24) provides a useful perspective depicting universities as "knowledge institutions". He distinguishes three different types of knowledge:

commerce, banks, government departments] are systematically engaged in interactive learning through an institutional milieu characterised by embeddedness".

knowledge as a *commodity*; knowledge as *human capital*; and knowledge as *social capital*. Each is relevant to universities.

Some other authors focus on the role of universities in terms of technology transfer (see Mowery and Shane, 2002) and knowledge spillovers (see Adams, 2002; Varga, 2000).⁷ Models of local economic development emphasising local production and innovation networks have identified universities as sources of knowledge which could be commodified for use within the local economy either through licensing or the formation of new firms (e.g. Segal Quince and Partners, 1985). Such claims, based on the experiences of a few exemplary regions during the 1970s and early 1980s, led to a flurry of initiatives, such as science parks and technology transfer offices, albeit with significant variations across nations and in success rates (Charles, 2002:22).

An important process for the localisation of knowledge is the development of human capital (Charles, 2003:11). Universities have traditionally produced graduates for a national labour market dominated by large employers with little concern for SMEs or graduate retention in local labour markets. This model has begun to break down in response to changing patterns of employer demands, such as the decentralisation of large corporations into clusters of smaller business units and the greater role of smaller businesses as sub-contractors, suppliers, and franchisees (Charles, 2003:11). Thus the impact of the universities is not restricted to the technological sphere but may spread

⁷ From a theoretical perspective, in the area of regional development, more research is required in relation to spatial proximity and the different transferability of the various types of knowledge that universities can produce. Not every form of university knowledge transfer requires spatial proximity, and university expertise can be channelled between distant locations. Nevertheless, it is suggested that when academic knowledge is in its “evolving, non-codified stage”, successful knowledge transfers between university and industry requires spatial proximity (Varga, 2000:141). The transferability of knowledge from universities to their local areas seems to be influenced by various other factors such as the national and local university funding system, national policy initiatives, the nature of industrial sectors, nature and the size of local firms, and local mechanisms and incentives for knowledge transfer (Adams, 2002; Cohen et al., 2002). Most of the existing work seems to have focused on individual channels of knowledge transfer (e.g. patenting, licensing, start-ups) and their outcomes (Mowery and Shane, 2002). The full range of these formal mechanisms and the much broader array of channels, including their interactions, that constitute the interface between a university and its region, need to be explored.

into the wider social and economic performance of their localities and region. However, the broader significance of labour-market processes for technological and organisational dynamism including that of higher education, has yet to be examined (Angel, 2000:127-8).⁸

In regional studies and economic geography literature, attention has been drawn to the roles played by formal channels of education and learning such as schools, colleges and universities, and by research institutions such as government research institutes and university laboratories in the creation of regional industrial networks (see Saxenian, 1994; Keeble and Lawson, 1997). In the knowledge economy, knowledge, as the key ingredient of economic growth and learning is said to have become the best way to understand regional economic change (Malecki, 2000: 119). In the literature of the 'learning economy' (Lundvall, 1995), which emerges from the work on national innovation systems, different kinds of knowledge are identified. These are summarised as

- Know what –facts and information;
- Know why-principles and laws necessary to reduce trial and error;
- Know how-the skills and capability to do something acquired within the workplace;
- Know who-information about who knows how to do what and the social capability to establish relationships to special groups, in order to draw on their expertise.

In the case of know *what* and *why*, formal learning in schools and universities is the normal channel. Know *how* depends on practical experience, through tacit learning but

⁸ The significance of local labour-market processes goes beyond transactional efficiencies in the matching of labour supply and demand. The movement of workers and students is a central pathway for the transfer

also through network relationships. Know *who* is learned from social interaction via professional associations, day-to-day dealings with customers and a wide range of other actors and agencies (Charles, 2002:24). Many of the existing models of university-industry interaction emphasising high-technology knowledge transfer and academic entrepreneurship activities seem to underestimate the importance of universities in interactive learning, creating social rather than technological networks and trust (Morgan, 2002).

In this line of thinking, the central concern of this thesis is to investigate the role played by universities as part of ‘innovation systems’ or, in other words, to examine in what ways universities can be seen as parts of the ‘initial capital’ of their region. The role of universities as knowledge institutions in their region has been (re) discovered with the recent ‘regionalisation’ phenomenon accompanying the globalisation of economic activities (see above, p.64). The following section clarifies some models to explain in what ways universities can play a role in regional economic development within the globalising economy.

3-2 MODELS OF REGIONAL DEVELOPMENT

Knowledge and the Spatial Proximity Debate

In academic literature, the connection between firms’ success, innovation and the use of external technological resources, and the localisation of economic development now seems to be widely accepted. For example, Dicken (1999:39) highlights the importance of geography in innovation and learning, arguing that innovations are less the product of individual firms than of the “assembled resources, knowledge and other inputs that are localized in specific places”. Recent theoretical advances in the social sciences provide new insights into the path-dependent evolution of social and economic arrangements.

of knowledge and experience. These links between labour-market structure and processes of innovation

There are several strands of literature in economic geography and other cognate fields, which are reviewed below.

One of the strands of the literature in the current debate in economic geography has focused particularly on the interactions of ‘regional collective learning’ between firms and institutions within local enterprise clusters (Keeble and Willkinson, 2000).⁹ The other strand, on the ‘learning region’, and ‘regional innovation systems’, considers in addition the role of regional institutions and social capital in facilitating networking and the generation and diffusion of knowledge (see Chapter 2, p.36). Both this localised learning and the regional innovation system suggest that geographical proximity between organisations is important in stimulating dynamic learning and innovation (Potter et al., 2002:285). In this literature, regional institutions are allegedly expected to actively create a number of economic and social relations to help facilitate a series of institutional interactions. As is shown below, universities are seen as one of the important regional institutions involved in this.

and technological change remain largely unexplored (Angel, 2000:127-8).

⁹ The agglomeration of related firms in specific locations has attracted great scholarly interest among social scientists since the time of Alfred Marshall (1890). Recent theoretical research on the territorial dimension of economic and technological development has drawn attention to the local processes of ‘collective learning’, which involve exchange and development of organisational and technological knowledge. A conceptualisation of regional collective learning was set out by the *Groupe de Recherche European sur les Milieux Innovateurs*. For instance, Camagni (1991:130 cited from Keeble et al., 1998:320) argues that collective learning is central to the development and definition of a successful local milieu. Keeble et al., (1998), in their study of the Cambridge Region, conclude that the development of a regional capacity for collective learning involves both the establishment of preconditions for learning, in the form of culturally based rules of behaviour, engagement and collaboration and accepted but tacit codes of conduct between individuals and firms which enable the development of trust, and conscious and unconscious regional processes of interfirm and organisational networking and diffusion of embodied expertise (Keeble, et al., 1998:330). It is important to note that networks and links between firms and other organisations in a region such as universities, regional development agencies, city councils, chambers of commerce and so on, and the links via the regional labour market are viewed as playing key roles in the recent evolution of dynamic ‘innovative milieu’.

These interactions are variously called ‘interactive learning’ (Florida, 1995), ‘innovation networks’ (Cooke and Morgan, 1993), ‘institutional thickness’ (Amin and Thrift, 1994), ‘localised learning’ (Lorenzen, 2001), or ‘soft social capital’ (Putnam, 1995). This implies that knowledge, learning and communication require consideration at a local and regional level, along with an examination of these institutional interactions. A consideration of “the institutional preconditions of the learning region” (Morgan, 1997:497) will be helpful to understanding the mechanisms of knowledge creation at regional level, and to identifying the preconditions for becoming an innovative region.

Knowledge transfers are strongly emphasised by economic geographers working on innovation systems and localised learning concepts. In general terms, there are contrary views on the association of spatial proximity and the different transferability of various types of knowledge.¹⁰ In short, “many transactions are highly sensitive to geographical distance by virtue of their substantive complexity, uncertainty and recurrence over time” (Storper and Scott, 1995:507-8).¹¹

In this process, many scholars emphasise the importance of regionally embedded knowledge and the shared norms and values which allow effective organisational as well as individual learning (Maskell and Malmberg, 1999). Some authors argue that

¹⁰ According to some authors, the transmission of new technological knowledge is said to work better within “geographical boundaries” because this kind of knowledge has “a tacit and uncodified nature” (Lundvall, 1988 cited in Baptista, 2000:516). It is claimed that “diffusion of new technological processes may occur faster in geographical areas where the density of sources of knowledge about such technologies is higher”(Baptista, 2000:516). In contrast, the view of Chesnais (1988) is that “commercial (sales, strategic, or financial) and basic scientific networks can work well at a long distance”. However, “dealing with practical production-related issues, such as designing software or making product adjustments or applications, tend to be geographically a clustering phenomenon” (cited in Cooke and Morgan, 1993:553).

¹¹ According to Maskell and Malmberg (1999), globalisation is a process encoding localised tacit knowledge and capabilities, and the codification of tacit knowledge is a process very similar to the process of ‘ubiquitification’, whereby the competitiveness of firms in the high-cost areas of the world is getting undermined. However, the conversion from ‘tacit’ to ‘explicit’ knowledge is not so straightforward, and the distinction is not so clear-cut. Diffusion of knowledge from ‘local’ to ‘global’

forms of “hybrid” or tacit knowledge (Goddard and Chatterton, 1999:687) are most readily developed within the region because “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” (Morgan, 1997:495).¹² In this line of thinking, collective learning processes and a collective tacit knowledge are linked to the region because of the coincidence of social, cultural and spatial proximity. The idea of collective tacit knowledge in regions bears strong similarities to the concept of ‘untraded interdependencies’ (Storper, 1995)¹³ and ‘social capital’ (Putnam, 1995), but further clarification of these concepts is needed. From a somewhat different perspective, Michael Porter argues that “competitive advantage is created and sustained through a highly localised process” (Porter, 1998:19) and that “national competitive advantage ...resides as much at the level of the cluster as it does in individual industries”(1998:152). This process is increasingly associated with regions.

However, despite the consensus concerning the importance of the sub-national, the literature is not consistent about the scale at which collective learning and innovation occur. Waters and Lawton Smith (2002:634-5) argue that, despite the consensus concerning the importance of the sub-national level where interactions of institutions take place, there is confusion as to what is meant by *regions*.¹⁴ The

and *vice versa* is not a simple process. Allen (2000:15) critically examines the tendency to map the tacit-explicit knowledge distinction on the local-global scale in economic geography literature.

¹² Tacit knowledge such as *know-how* (skills), *know-who* (networking), and *know-why* (experience) is said to have become the most valuable type of knowledge depending upon “interpersonal relationships, trust, and cooperation” (Goddard and Chatterton, 1999:687) in the process of producing ‘innovative knowledge’. The process of knowledge production can be summarised as follows: it consists of the mutual process of capturing ‘tacit’ knowledge, which is stored in human brains; making it ‘explicit’ and codifiable as information or knowledge about facts; and transforming existing (Mode1) knowledge into innovative (Mode2) knowledge creation (Gibbons et al., 1994).

¹³ Storper (1997:28) stresses that agglomeration economies are not based solely on input-output relations but, also and crucially, on the “untraded or relational dimensions of organisations and technologies” allowed by proximity, so that the principal assets of territorial economies are relational and not material.

¹⁴ This is because of confusion between “regions” as “multiple nodes of activity” and “localities” where “activities are clustered around a single node or functionally linked near nodes” (Waters and Lawton Smith, 2002:634).

‘rhetoric’ concerning the advantage of the regional scale of policy intervention is not consistent with the ambiguities of scale at which innovation and intervention actually occur. Given the emphasis placed on proximity it would appear that authors are prioritising localities whilst literature on globalisation seems to emphasise ‘regionalisation’ of some sorts (see above p.62). Moreover, the conceptual coherence of a region depends on the extent of devolved powers which allow regions to develop a strategy as a region in relation to central government. Hence there are inherent tensions between local and regional levels of policy supports and between regional agencies and central government (see Chapter 5 for the UK policy context).

It is also important to emphasise that the idea of localised learning needs to be considered in relation to non-local actors. Past research on industrial districts, innovative milieu, and local milieu has stressed primarily the essential nature of local conditions for innovation, and the shift from the exogenous to the endogenous model has caused many to overlook the critical role of links to ‘non-local networks’ (Park and Markusen, 1995; Malecki, Oinas and Park, 1999:261; see above p.66). Park argues that non-local embeddedness is important for the formation and functioning of industrial districts (Park, 1995:155).¹⁵

¹⁵ It is suggestive that, in the newest strategies of some of Italy’s most advanced regions, Emilia-Romagna and Tuscany, crucial importance is attached to finding the right mix of supporting intra- and inter-regional linkages (Bellini, 2000 cited in Hassink, 2001:227).

Regional Innovation Systems and Multi-Level Governance

The regional innovation system concept originates from discussions about ‘national innovation systems’ (e.g. Nelson, 1993; see also above p 66). Von Hippel (1988) has provided the view that innovation takes place through distributed systems.¹⁶ Although the nation-state provides the overall organising framework, individual and often local institutional actors, operating in conjunction with nationally determined initiatives and strategies, comprise the framework of innovation systems operating at sub-national levels. Systems approaches to innovation vary in emphasis and level, but they share a common core idea that: “the overall innovation performance of an economy depends not so much on how specific formal institutions (firms, research institutions, universities, etc.) perform, but on *their interplay with social institutions such as values, norms, legal frameworks, and so on*” (Smith, 1995:72, my emphasis). It contrasts with the linear model of innovation which is a simple deterministic model that represents the sequence from basic and applied research to product and process development.

The concept of regional innovation systems has been empirically described and widely tested (e.g. Braczyk et al., 1998; De la Mothe and Paquer, 1998).¹⁷ The regional innovation systems approach has developed a typology of systems (Cooke, 1998:19-24) assisting in the understanding of the structural differences in the ‘systemness’ of regions. Comparative analysis of regional innovation systems has provided some guidance for policy makers as “policy-oriented innovation stimulation models”(Hassink, 2001:224). The institutional thickness (Amin and Thrift, 1994:15) found in local systems such as

¹⁶ Von Hippel’s research shows that innovation within a manufacturing sector is diffused to other groups in the system through various mechanisms including personal contacts. To repeat, a system of innovation is constituted by “elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge” (Lundvall, 1995: na). Lundvall (1995:2) summarises the essential characteristics of systems of innovation as follows: “...system of innovation is a *social* system. A central activity in the system of innovation is learning, and learning is a social activity, which involves interaction between people. It is also a *dynamic* system, characterised both by positive feedback and by reproduction”.

Baden-Württemberg in Germany and northern Italy has provided models of regional innovation systems for other regions.¹⁸

The recognition that the organisation of innovation support occurs horizontally within regions and vertically between regions, member-states, and the European Union has led to the idea and theory of “multi-level governance”(MLG) in contrast to the state-centric view of the development of the European Union. The MLG approach accepts the greater complexity of overlapping competences displayed by different governances and the emergent and innovative role of new kinds of actors which may operate across national and regional levels. Cooke et al. (2000a: 97-105) incorporate the MLG approach into their framework and context of regional innovation. MLG theorists hold that in cases such as regional policy and the future development of innovation policy, “no single level has exclusive competence over policy” (Cooke et al., 2000a: 99).

According to Cooke et al. (2000a: 104) a regional innovation system consists of two sub-systems. Following Autio (1998), the two key sub-systems in any functioning regional innovation system are:

- The knowledge application and exploitation sub-system;
- The knowledge generation and diffusion sub-system.

The first is principally concerned with firms whilst the second is mainly concerned with public organisations like universities, research institutes, technology transfer agencies, and the regional and local governance bodies responsible for innovation support practices and policies.

¹⁷ Recently, a distinction has been made between *Entrepreneurial*, and *Institutional* Regional Innovation Systems (ERIS & IRIS). (Cooke, 2003a: 12).

¹⁸ In the example of areas such as Baden-Württemberg “leading edge large engineering companies (for example, Bosch) are said to rely on local subcontracting and supply networks for their flexibility and innovative excellence” (Amin and Malmberg, 1994: 230-1).

Each of these sub-system organisations interacts with the others and with national innovation organisations or the national innovation system as well as international policy- and knowledge- generating organisations such as the EU and non-European universities, research institutes and firms (Cooke et al., 2000a: 105). Most regions, and many nations, have poor linkage between these two sub-systems. Where nations or regions have overcome this barrier, it is either through the “successful working of market mechanisms”, set in an appropriate regulatory environment, as classically found in the USA. Or, alternatively, market failure is overcome by the “establishment of state entities that directly or indirectly seek to straddle the ‘exploration’ to ‘exploitation’ divide”. Regional development agencies have often embarked on the second of these to integrate the necessary knowledge flows, since the first option is emergent but not yet mature (Cooke, 2003a: 12).¹⁹

Following these arguments, the thesis adopts the concept of regional innovation systems set within the MLG framework as a basic conceptual framework to investigate institutional interactions within a region. In addition to supra-national, national and regional scales of the MLG approach, it is important to consider the inherent tensions between the relationships at regional and sub-regional (local) levels. Later chapters examine the extent to which different regions have ‘regionalised’ knowledge economies through horizontal regional partnerships for collective learning and vertical interaction within a MLG framework. See Figure 5.1 (Chapter 5, p. 161) for a MLG model in the UK.

¹⁹ In some regions, “boundary crossing” institutions have been developed in order to bridge the gap (Cooke, 2003a: 13). Examples include the services provided by the Steinbeis Foundation in Baden-Württemberg which demonstrate good practice (Hassink, 1996 cited in Lorenzen, 2001:177). Large firms make good use of Fraunhofer and industrial research institutes for technology applications work; the Max Planck basic research institutes and universities are given commissions. For SMEs, the technology-transfer activities of the Steinbeis Foundation, chambers of industry and commerce, and consultants are widely accessed to solve innovation problems throughout the *land* (Cooke et al., 2000a: 111).

3-3 THEORY, POLICY AND INSTITUTIONALISATION

An Approach to the New Regionalism Debate

The concepts such as clusters (Porter, 1990), localised learning systems (Lorenzen, 2001), regional innovation systems (Cooke, 1998) and learning regions (Florida, 1995) all seem to have played a role in the institutionalisation of regional policy learning that involves both research and policy communities (see Lagendijk and Cornford, 2000:216). Analysts such as Castells and Hall (1994), Martin (2001) and MacLeod (2000) raise questions relating to “the inter-relations between academic critique, policy prescription, power networks, and the social construction of knowledge” (MacLeod, 2000:227-8).

For example, Lovering (1999), in a critical article on what he terms the ‘New Regionalism’, points to an intimate connection between the “construction of knowledge in the research communities” and “the policy agendas of powerful institutions” to the effect that “theory has been led by policy” (Lovering, 1999:393). It is considered in this thesis, however, that theory can be led by policy. Theory can be shaped by policy but it cannot be governed by policy. Theory needs to be robust enough to be led as well as to lead policy. In light of this, to examine the symbiotic relationships between theory, policy and institutional practices is important.²⁰

Careful investigation is needed with regard not only to the formation of the theory but also to the ways theoretical concepts are applied within the specific local

²⁰ Rhys Jones (2001:284) points out that much conceptual and empirical research has focused on the “methods through which regions located in various under-performing states may replicate the institutions, policies and strategies adopted within successful regions such as Silicon Valley in the US and Baden-Württemberg in Germany” (see also Lovering, 1999). Jones goes on to argue that academic researchers and policymakers often advocate the “deployment of a series of institutions and practices within given regions, so that they may foster the political and organisational infrastructure necessary for economic growth” (Jones, 2001:285).

socio-economic conditions in which individual institutions are embedded. For example, in terms of policy implementation, the challenges to the aforementioned innovation systems are multi-faceted, and particularly difficult in the case of lagging regions.²¹

The principal difficulty of implementing policy strategies which aim to enhance collective regional learning can be found in the very ‘tacitness’ of the focus of such policies. Economic development practitioners, particularly those located in less prosperous regions, need to ensure the right policy conditions exist to build soft infrastructures such as conventions, trust-based interactions and civic cultures, which are inherently intricate and difficult to transplant. Developing new routines with respect to intangible assets or Storper’s ‘*untraded* interdependencies’, especially trust, informal know-how trading, reciprocity and so on, requires time, resources, and, among others, “a collective vision of regional renewal” (Morgan, 1997: 497). The economic decline of several decades in LFRs will not be reversed overnight. Indeed, their remaining interregional inequality and social insecurity cannot be overemphasised.

Given the particular interest of this thesis, the following chapters focus on the way institutions have reacted to theories and policy based on theories. By doing so, it is possible to illustrate the strategic actions of agents within a strategically selective context which is shaped by policies but is constantly being transformed by these strategic actions of agents (see Chapter 2, p.30-1). Here the main conceptual framework, namely regional innovation systems, is discussed in relation to the role played by universities. In Appendix 3, two other theoretical concepts (the learning region and

²¹ Amin stresses the development problems in less-favoured regions (LFRs): “The culture of command, hierarchy and dependency that characterises so many LFRs has stifled the formation of a reflexive culture among the majority of its economic institutions, and consequently prevented the encouragement of rationalities geared towards learning and adaptation. To correct this failing, considerable policy attention needs to be paid to the nature of organisational and management cultures and actor rationalities which circulate within a region’s dominant institutions. Only too often, policy actions has sought to introduce new players and institutions in a region, without giving due regard to the dominant ‘mind set’ and its effects on innovation and adaptability” (Amin, 1998 cited in OECD, 2001a: 24).

cluster) are reviewed in order to reveal the way theories influence policies and agents' strategic actions. Thus, the aim of this part is to illuminate the way theory and policies interact through such strategic actions within strategically selective contexts.

Paradox of Universities within Regional Innovation Systems

As mentioned in Chapter 1 (p.19), in the light of the roles played by universities and institutional networks at a 'regional' level, two key questions can be raised:

- What are the implications of the regionalisation of innovation systems to universities as knowledge institutions?; and
- Can universities as collective entities be considered as part of the innovation system of their region?

Universities and other public organisations are seen to play a central role for some localised learning and innovation systems because they can carry out R&D and can function as a pool of locally developed knowledge (Lorenzen, 2001:177). Another reason why greater pressure is now put on universities to take the lead in regional economic development, apart from the one sees them as sources of potential knowledge commercialisation, is that they are among the few organisations in any given region with "legitimate authority to speak knowledgeably" on science, technology and innovation policy to support the regional development (Cooke, 2002:50).

There is some evidence that in 'successful regions', universities play a big role in facilitating innovation and learning processes (see Chapter 1, p.12). The roles played by universities in local development processes have been acknowledged by several geographical studies and by researchers in other areas (Peters, 1988; Saxenian, 1994; SQW, 1988; 2000a; Varga, 2000). Recently, policy communities in many countries have come to view universities as the knowledge base at the heart of the knowledge-based economy (OECD, 1996; DTI, 2001).

At a conceptual level, it is argued that higher education plays a key role in the processes of industrial innovation, and university-industry links and collaboration are crucial for the efficiency of that process (Schuetze, 2001). Universities are often seen as central parts of a regional innovation system (Cooke et al., 2000a: 18; Varga, 2000:141; Schuetze, 1996a, b; see also Chapter 1, p.3). Nevertheless, it has been pointed out that the successes of regional technology policies promoting innovation from R&D at universities are surprisingly limited in many European regions with a few notable exceptions. As some authors point out, universities are seen to be difficult to co-ordinate as part of regional strategies (Lorenzen, 2001:177; Lagendijk and Rutten, 2003:217; Waters and Lawton Smith, 2002:636).

Universities' priorities in the relationships with their regions/localities and their stakeholders are quite complicated (Chatterton and Goddard, 2000:478).²² A university is embedded in many different types of 'community': some local, some global, some national, some overlapping and interacting, some barely recognising each other (Charles, 2003:13). For some universities, to become a regional institution of higher education has been associated with a negative image, seen as "a source of stigma" (Duke, 1999:23). On the other hand, regional partnership can be a route to international research standing (Duke, 2002: 34). Thus universities are difficult to co-ordinate as regional players, partly due to their status as "autonomous institutions with allegiance to multiple territories" rather than to specific regions as such (Waters and Lawton Smith, 2002:636).

²² Goddard et al. (1994) point out that there are different aspects of a university definition of its local communities, and that the university's perception of what constitutes the local communities is influenced by a differentiated and contested set of relationships. Many universities have a "tiered" definition of their localities which to some extent corresponds to the tiered structure of local government (Charles, 2003:14). In the UK, universities seem to distinguish their local area from the 'region' which is defined by central government (see Goddard et al., 1994).

It is important here to consider the geographical dimensions governing the university's knowledge production in a wide structure. There are shifts in the models of territorial development. First, as mentioned already, there is a shift from a national technological framework towards a regional institutional model. The national innovation system literature (e.g. Freeman, 1992) acknowledges that universities catalyse technological advances. The debate since the late 1980s and 1990s has centred on the issues of arrangements for and settings of university-industry co-operation, and the factors enhancing and facilitating this co-operation that would enhance innovation. These included science parks and 'technopole' developments (see Massey et al. 1992; SQW, 1988; Castells and Hall, 1994). The focus has been primarily on the issues of the creation of high-technology firms and technology transfer from research to industry. In this model, the university is seen as providing R&D and primarily scientific and technological knowledge, principally in the national innovation system.

As already discussed, a growing body of literature today suggests that there is something distinctive about innovation as a 'localised' process, as distinct from a national phenomenon, in which proximity, repeated transactions, routine practices, shared norms and identity combine to produce innovative outcomes. For firms, it is generally recognised that their competitive performance is influenced by the characteristics of their immediate environment. National and local government, as well as other agencies with an interest in economic development, are interested in creating local and regional environments that are attractive for innovation, and in sustaining and strengthening those that already exist. Many scholars emphasise the importance of 'regionally embedded knowledge' and the shared norms and values which allow effective organisational as well as individual learning (Maskell and Malmberg, 1999). However, as already mentioned above, there is an ambiguity about the scales at which

innovation and learning really occur and the relationships between national, regional and sub-regional policy instruments (see above, p.74-5).

A growing number of public agencies concerned with local and regional development are looking to universities to play a key role, and more importantly, have financial resources at their disposal to encourage the “localisation of universities” (Goddard, 1997, 24).²³ The growing contribution to universities made by regional and city governments in some national systems has been recognised (Clark, 2001:14). It is argued that, for universities, with fewer public resources available for higher education, there will be a need to place a higher priority on being “responsive to their local and regional communities’ needs” and on being “useful to society” in order to receive public support (Shattock, 1997:27) and, become “a bridgehead to the global community” (Shattock, 1999: na). For universities, academic entrepreneurship has become both “an organisational growth regime” and a “regional economic and social development strategy”(Etzkowitz, 2003:110).

There are internal drivers which determine the behaviour of universities. There are also external drivers which influence universities. For example, at a regional and local level, ‘industry-academia-government’ links are shaped by several factors as identified by Charles and Howells (1992).²⁴ For industry, local authorities and regional development agencies, universities are increasingly seen as local assets to be exploited

²³ The issue of the regional role of higher educational institutions has been examined in several national policy contexts over time and across countries. Whilst the role of universities in regional development has long been recognised, it was not, however, explored systematically until the early 1990s. In the 1960s, many governments used universities as tools of regional development to promote regional convergence between core and peripheral areas. Thus, although regional issues have existed for universities since at least the 1960s, an understanding of these was not broadly shared amongst many of the established universities. Since the mid-1990s, several authors have drawn attention to the issues specifically involving a university as ‘a regional actor’ (de Gaudemar, 1997; Chatterton and Goddard, 2000; Lynton, 1996).

²⁴ These include the nature of local outside representation on the university’s governing bodies (e.g. Senate, Council), the provision of incentives or mechanism funding from regional organisations, and the perceived role of institutions within a national system (Charles and Howells, 1992:93).

for the benefit for the regional economy. However, there are few theoretical and empirical underpinnings that have explored the formation of ‘triple helix’ links between academia, industry and government especially at the regional level as part of regional innovation systems.

These geographical processes affect the choice and strategies of universities. The different roles and functions ascribed to a university at various geographical levels are becoming highly complex, and the university will need to share more effectively some of its key functions with other institutions in society (Meek, 2000:23). Davies (1998), in a report for the Association of European Universities, stresses the growing urgency for HEIs to take engagement with external partners seriously:

In order to respond better to the needs of different groups within society, universities must engage in a meaningful dialogue with stakeholders...Universities which do not commit themselves to open and mutually beneficial collaboration with other economic, social and cultural partners will find themselves academically as well as economically marginalized (Davies, 1998 quoted in Chatterton and Goddard, 2000:477).

Dialogue between the universities and their stakeholders depends upon adequate communication practices and networks. In such a context, how far universities are able to co-operate with other actors to cover a broad range of knowledge production depends on each university’s values and strategies, and on its ability to become a “network organisation” (Buesta, 2000:404).

This poses a new complex challenge for universities. The current regionalisation mentioned above (p 61-5) as the “territorialisation process” (Lawton Smith and de Bernardy 2001:7) seems to change the spatial boundaries of knowledge. There is a demand for the university to be both a regional and an international organisation in the

globalising knowledge economy whilst many of the legislative decisions for higher education institutions are made at national level. Generally speaking, a central concern for universities is where the funding comes from, and what activities should be supported from existing budgets. In the current political climate it appears that universities “can no longer have a territorially neutral philosophy” (Lawton Smith and de Bernardy 2001:6).

Universities need to be analysed within regional innovation systems, whilst the framework of these systems need to be re-constituted in relation to the universities’ diverse activities and the policies influencing institutional behaviour. At a theoretical level, universities can be allegedly integrated into regional innovation systems via the different mechanisms of academic knowledge transfers (Varga, 2000:141). In order to reveal how universities work within ‘regional’ innovation systems located within the MLG structure in the globalising knowledge economy, three schematic types of university-based innovation systems can be distinguished as useful categories (see, OECD, 2002):

- Relations involving multinational enterprises and world class universities;
- Relations between universities and high-technology small firms; and
- Relations developing in a regional context between firms/communities and the local universities.

However, universities fulfil a useful role in blurring the line between these different levels. They can regionalise world class and high technology small firm relationships and make that knowledge available to actors whose innovative locus is much more regional in character. This role has to be put in the wider context of the MLG structure in the global knowledge economy: e.g. internationalisation of university-industry relations developing through the subsidiaries of multinationals, and by

intergovernmental co-operation particularly through the European Community (Drillhon, 1993:97) as well as through the national distribution of R&D, regional knowledge transfer systems, and the strategies adopted by individual universities.

However, many of the studies are based on the experiences of a few successful high-tech regions such as Silicon Valley and Cambridge (see Chapter 1, p.12), and lack sensitivity to the circumstances of an individual locality. The ideal models of regional innovation systems and concepts such as that of the learning region (Florida, 1995; Morgan, 1997) are tempered with ‘context-dependent factors’ relating to the geo-historical characteristics of regions, their knowledge infrastructures and knowledge transfer systems, as well as the strategies adopted by individual institutions within the region when the strategies are applied to individual localities through policy initiatives (Lawton Smith, 2000:72).²⁵ It is also important to note that each university, or even each department, within a university has different missions and emphases with regard to the geographical levels of activities in different fields. Universities, on the whole, continue to be seen as collections of “quasi-autonomous individuals”, and they have difficulty in defining, let alone implementing, collective goals (Lynton, 1996:79). Therefore, capturing universities as actors in regional innovation systems is a highly complex exercise.

As the following chapters reveal, this study shows that both universities and regions comprise a “complex spatially nested institutional arrangement” (Martin, 2001:204) in which knowledge is created, disseminated, applied and utilised. The question is whether there is a synergy between the different domains of institutional partnerships and networks, and how they form part of the complex web of institutional

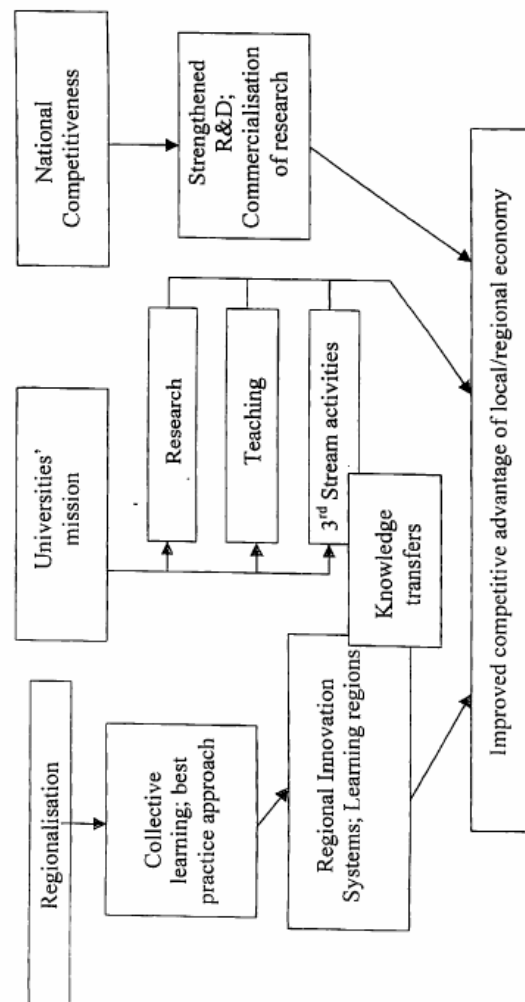
²⁵ Barriers to technology transfer at the local level can be explained as either “manifestations of failures in the system as a whole”, or “local difficulties” arising out of the characteristics of local firms and institutions which Lawton Smith calls “information conditions” (Lawton Smith, 2000:72).

arrangements and strategies vertically as well as horizontally. This institutional landscape needs to be studied and analysed within a robust theoretical framework in relation to the formation and implementation of public policy.

These are the conceptual contexts where the topic of the thesis, the role of universities in regional development, needs to be located. The concepts of regional innovation systems, learning regions or clusters, which all have strong emphases on spatial proximity and innovation/learning processes, have an inherent limit in analysing the role of universities as actors with multi-spatial strategies and activities. Regions *can* be considered as innovation systems but the question of whether and to what extent knowledge transfer and learning occur at regional and other (national and global) levels remains empirical (see Leydesdorff et. al, 2002). Therefore the MLG framework including its inherent tensions proves to be useful.

Figure 3.1 summarises the theoretical arguments that link regionalisation, universities' roles, and the competitive advantage of local/regional economies. The policy contexts related to this conceptual framework are examined in Chapters 4 and 5.

Figure 3.1 Conceptual map of current theoretical thinking on universities and regional advantage



Universities in Multi-Level Governance Structures

In order to reveal how universities work within the ‘regional’ innovation systems, which exist within the MLG structure within the EU (see above, p.76), the diversity of activities and missions within higher education, as well as the policy instruments influencing various geographical levels of institutional activities have to be considered (see Chapter 4). This is possible by examining the strategic positioning of each institution in relation to other stakeholders both horizontally and vertically.

Whilst regional or local governments may have some influence over universities and public research institutions, the big budgets for investments like universities and scientific research are usually at national or trans-national (European) level (c.f. Drilhon, 1993: 96). National or transnational governments are good at setting frameworks for action but less so at making detailed strategy in contexts with significant geographical variation, which is supposedly the strength of sub-national governments. Thus co-ordination between national and sub-national governments is crucial. Therefore, “joining up government actions” involving horizontal and vertical governmental relations (Cooke, 2002:8) will be necessary, including at trans-national level where appropriate.

It is important to specify the factors that stimulate regional institutional change in relation to both national and international factors and to understand the roles to be played by both private and public-sector organisations in this process (OECD, 2001a: 24). Policies are considered to be effective when integrating different aspects of the local environment such as entrepreneurship, infrastructure and training, when targeting existing local knowledge, and being selective in the number of sites activated in order to focus resources sufficiently (Malecki, 1997:262). Another key item for policy makers’ agendas is how to stimulate individual and organisational learning so that less favoured

regions can go beyond path dependency. It is important to find the ‘right’ conditions for encapsulating regionally embedded knowledge and the shared norms and values in ways which allow effective organisational as well as individual learning.

This thesis argues that the choices and strategies of universities in relation to European, national, regional and local policy instruments have to be considered as “complicated geographical accomplishments” (Philo and Parr, 2000:518). Universities are increasingly getting involved in such multi-scale, multi-layered, horizontal and vertical institutional governance structures. To a large extent, the role of universities in the local economy is determined by the degree of integration of institutions in the local economic system, which is itself influenced by the national and international as well as regional and local economic and educational systems.

CONCLUSION

This chapter has critically investigated several analytical frameworks linking concepts such as spatial proximity, collective learning, innovation and regional economic development. It has discussed the policy implication of these conceptual tools in relation to globalisation and the alleged importance of tacit knowledge. Knowledge is seen as a significant ingredient in the innovation process, and the importance of regionally embedded knowledge and the shared norms and values which allow effective organisational as well as individual learning is increasingly recognised.

Regions can be seen as systems of innovation, but they have also to be seen as multi-spatial systems under socially and culturally constructed processes, with policies as part of the institutional processes of the construction of regions. Theoretical concepts such as regional innovation systems, learning regions and clusters provide a systematic view in which learning is seen as an interactive process within a region with non-linear

processes of knowledge exchange and production. The chapter showed that universities have been ‘re-discovered’ as regional players within the globalising knowledge economy. In particular, in theory, universities are seen to be the centre of such knowledge production, but in practice it is difficult to co-ordinate them in that role as part of regional strategies because of the multi-spatiality of their activities and multi-sources of their funding. It is important to note that these innovation processes involve not only regional actors but national and global actors. From a policy implementation point of view, especially for less favoured regions, an institutionally appropriate policy framework is necessary within the vertical and horizontal multi-level governance structure. The chapter argued that it is imperative to examine the symbiotic relationships between the theory, policy and institutional practice.

This thesis sees regions as *multi-spatial innovation systems* comprising knowledge generation and exploitation sub-systems. Institutionalisation processes between national, international as well as sub-regional levels involve institutional actors and policies. Networks between institutional actors are analysed as the main focus of the institutionalisation process. This chapter has delineated the conceptual and methodological approach to be taken in order to capture the institutionalisation process with universities as strategic institutional actors positioning themselves within this multi-spatial organisational field.

This chapter concludes Part I in which the research issues have been introduced (Chapter 1), followed by the presentation of theoretical perspectives, research design and methodology (Chapter 2). Then a conceptual model has been presented placing universities within the *multi-spatial innovation systems* comprising knowledge generation and exploitation sub-systems (Chapter 3).

Part II

Policy Context

Part II comprises two chapters, each providing the policy context in the UK. Chapter 4 sets out the general background of the UK higher education system, introducing the recent higher education reforms and policy initiatives. Chapter 5, in turn, looks at the multi-level structure of regional development policies in the UK with the influences from the EU.

Chapter 4

Markets, Governance and the Geography of Higher Education: Knowledge, Universities and UK National Competitiveness

INTRODUCTION

The roles of universities have always been defined by their relationships with the wider society. Most university's work today has been focused upon three main tasks. The first is to provide teaching, education and training to students. The second is to carry out research. Finally there is the third task, which is described under various titles such as, 'third-leg activities' or 'third-stream activities' (introduced in Chapter 1, p.15). The purpose of this chapter is to clarify the emergence of this third task of universities located within the wider structure of higher education policies and the history of universities and to relate it to the geographical dimension of university activities.

Allegedly, there have been two powerful forces behind the transformation of universities throughout the twentieth century to the present day. The first is "the triumph of natural science", technology and application of science (*The Economist*, 1997:4) and, as a consequence, a closer link between the university and industry has been forged. The second force behind the transformation of the university throughout the twentieth century towards the present time is said to be "the demand for mass education" (*The Economist*, 1997:4). These two forces have been transforming the nature of the two main activities of the university, namely, research and teaching, and now increasingly the new 'third' role of the university seems to be being forged out of these transformations.

As has been shown in Chapter 3, universities are part of the wider geographical processes which include international, European, national and sub-national actors.

According to Goddard and Chatterton (1999:685), one of the most interesting aspects of the 'joined-up thinking' of the New Labour Government in the UK is the "links which are being forged between higher education policy and territorial development issues". Higher education policy in the UK forms an important part of the national policies aimed at the competitiveness agenda, which has two interrelated dimensions. One is the commercialisation of scientific knowledge and the other is the massification of higher education through widening participation and lifelong learning agendas. Thus the contribution of higher education to society has both economic and social aspects. Building on these two dimensions, there has been a growing number of national initiatives/incentives in recognition of the roles of universities in the economy and society at large, broadly called 'third stream activities' and, in recent years, many of these policy incentives are being increasingly linked to regional agendas.

This chapter is comprised of three parts. The first part gives a broad account of the challenges that higher education institutions are facing set against a wide historical perspective. Secondly, the higher education system in the UK is investigated outlining the basic structure of the 'organisational field' with its current policy agendas. The third part examines the regionality of university activities, clarifying the different dimensions of university activities and the different institutional priorities. The regionality agenda is linked to the emergence of a new 'strategically selective organisational field' at a regional level, which is further investigated in Chapters 5 - 8. The process involves a two-way recognition process between universities and their regions. Firstly, universities are recognised as important strategic actors within their regions by other regional actors. Secondly, universities have found their regional stakeholders more important than hitherto.

4-1 HIGHER EDUCATION, KNOWLEDGE AND WEALTH CREATION


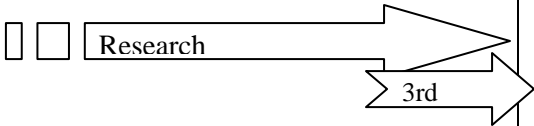
Higher Education as a Knowledge Institution

Universities are defined by their role in the production and the mediation of knowledge.

A brief historical overview of the relationship between the university and the wider society would help in grasping the changing nature and emphasis of the university's activities in relation to knowledge production and mediation (dissemination and application). First, the primary and oldest role of the university is education. The second role, research, has emerged more recently (since the 19th century) and only gradually come to be seen as a major university activity, especially with the growth of science and technology. The third category, the 'third stream' activities, which involves broad relationships that universities have established with the community and industry both locally, nationally and globally, has increased in significance in more recent years. Table 4.1 sums up the historical transformation of the main functions of universities.¹

Table 4.1 Expansion of the Western University Mission

¹ This table is constructed from data in Delanty (2001) and Etzkowitz (1994). Also, it is based on notes taken from the seminar held at the Institute of Education in London in February 2003. The presentation given by Prof. Robert Cowen was particularly useful.

	Medieval	Modern age		
	11 th -15 th	16 th -	Late 19 th to Early 20 th century	Since late 20 th century
Main Concept	Religion	Teaching	Research	Enterprise
Institutions in society	Church	State; Science		Science parks; incubators
Dominant knowledge	Christianity	Science	 Social science; Economics; Business management	
Social change	Enlightenment; Scientific revolution		First academic revolution	Second academic revolution <i>Knowledge-driven economy;</i> <i>knowledge society</i> Mass higher education Internationalisation
New mission	Preservation and dissemination of knowledge	Nation building	Production of knowledge	Application of knowledge <i>Third mission:</i> economic and social development
Medium	Latin	National language English?		
Models Institutions People	Bologna, Paris, Oxford	Berlin Humboldt 1810 'research university' Newman 1852 'Idea of university'	MIT Land grant model "major agent of economic growth"	MIT Stanford Cambridge (England) Imperial College <i>Citational</i> "World class" "triple helix"
Mission of the university	Teaching	Teaching/ Research	Teaching <i>and</i> Research	Teaching and Research and Third Mission 
Sources of funding	Private and Church endowment	State	State Private endowment	State Research council Industry Local authority Private endowment

Higher education is inescapably bound up with ‘knowledge’, both in advancing our understanding through research and in its acquisition by others through teaching (Clark, 1983 cited in Barnett, 1999:11). Another aspect of ‘knowledge’ that higher education institutions are having to face today is that of wealth creation. Leadbeater argues that universities should become not just centres of teaching and research but hubs for innovation networks in local economies. Universities should be “the open-cast mines” of the knowledge economy (Leadbeater, 1999:114), helping to spin off companies, for example. Consequently, the university laboratory becomes an incubator for knowledge economies whilst scrambling for soft, venture-driven money (Willinski, 2000:49).

The Economist’s 1997 extended survey of contemporary universities, under the title of “The Knowledge Factory”, positioned universities as a “major agent of economic growth” (*The Economist*, 1997). Here it was suggested that the traditional liberal ideal of university education is epitomised by Newman. In 1852, Cardinal John Henry Newman, the creator of the Catholic University in Dublin, propounded a definition of the function of the ideal university as “the high protecting power of all knowledge and science, of fact and principle, of inquiry and discovery, of experiment and speculation” (cited in *The Economist*, 1997).² This definition, that soon became famous, presents a stunning contrast to the today’s university as a ‘major agent of economic growth’ (*The Economist*, 1997:4). A university is considered to be “an

² In his influential *The Idea of a University*, Newman wrote that the university was about making gentlemen, ‘of cultivated intellect, a delicate taste, a candid, equitable, dispassionate mind, a noble and courteous bearing in the conduct of life’ (Newman, 1996 cited in Willinski, 2000:48).

increasingly useful asset” in the knowledge economy. There are good examples of universities contributing to the creation of wealth in knowledge economies.³

Two Academic Revolutions

Contemporary interactions among universities, industry and government are said to be the outcome of “two academic revolutions” (Etzkowitz, 1994:144). The first occurred in the late nineteenth and early twentieth centuries, with the “introduction of research into the university”. Then the university began to be transformed from an institution for cultural preservation and transmission of knowledge into an institution conducting research as well (Etzkowitz, 1994:144). The second academic revolution is currently under way, making economic development a function of a university in addition to teaching and research, harnessing universities more tightly to the business agenda.

The emergence of academic relations with industry and of technology transfer as an explicit university mission, in the late twentieth century, is an academic revolution as potentially far-reaching as the one that made research an academic goal during the late nineteenth century (Etzkowitz, 1994:140).

However, such a commercially driven revolution is not new. So-called civic universities in the UK were established from the end of the 19th century towards the early 20th century in search of establishing links between industry and academia. What is important about the current second academic revolution seems to be the fact that government at various levels is an important force in encouraging the link to enhance ‘science-based’ and ‘knowledge-based’ economic development.

³ There are examples of this in both public and private institutions in the USA. According to the headline of *Chronicle of Higher Education*, “Universities’ Royalties Income Increased by 33 % in 1997, Reaching \$446 Million” (*Chronicle of Higher Education*, January 8 1999, A 51 cited by Willinski, 2000:51). The University of California received 57 million dollars through licensing agreements on its intellectual property, whilst registering 122 new patents for the year 1995. Stanford University received 39 million in licensing agreements and 70 patents in the same year (Willinski, 2000:50).

David et al. (1994:14) argue that “the spirit of technonationalism has cast universities as an instrument of national R&D policy, assigning them a central role in generating knowledge and transferring it successfully to the domestic sphere of industrial application” (cited in Lawton Smith, 1997:na). As *The Economist* argues, a university is “not only the nation’s R&D laboratory but also the mechanisms through which a country augments its ‘human capital’, the better to compete in the global economy”(The Economist, 1997:4). Robertson argues that both improvements in “the supply of high quality labour” and “the exploitation of innovative academic staff” are seen as essential constituents of economic success (Robertson, 1999:18).⁴

Governments throughout the world are striving to establish reliable connections between wealth and higher education, epitomised by the rapid growth of the sub-regional economies of Silicon Valley with the contribution of Stanford University (see Chapter 1, p. 12).⁵ Governments in other countries are trying to follow these success stories. In many of the projects, higher education institutions are involved as key players. Malaysia plans to spend \$40 billion to create a latter-day Silicon Valley of its own (The Economist, 1997:5).⁶

Robertson summarises the changing environment surrounding universities and research institutions, and the new challenges confronting academic and educational institutions faced by government discourses within the so-called knowledge economy:

⁴ Robertson points out there are two forms of exploitation of the ‘intellectual capital’ of higher educational institutions (HEIs): first, an expansion of the higher education (HE) system leading to improvements in the “quality of labour stocks”; and second, investment in academic capital—that is, the “liberation of the research and innovation” locked up in a nation’s universities and research centres (Robertson, 1999:18).

⁵ Others such as ‘Research Triangle Park’ in North Carolina reinforce a growing perception of the role of universities in the science and technology base in economic competitiveness.

⁶ For example, Singapore has attempted to systematically encourage top talent and corporations in the country to participate in its state-of-the-art multimedia network called “Singapore One”, aiming to be the ‘giga-hub’ for Southeast Asia. Other examples include: South Africa’s “Cyber-townships”; Malaysia’s “Multimedia Corridor”; the “Redline” project in the Netherlands; “Smart Toronto” in Canada; “Stockholm Project” in Sweden (Schwartz et al., 1999:87). More recently, the Japanese government

The opening up of the ‘information society’, and the close attention now being paid to knowledge-intensive production is seen to oblige universities, colleges and research centres to generate a suitable return on public investment by producing both greater volumes of high-skilled labour and the innovations needed to refresh the economy (Robertson, 1999:19).

This is a challenge as well as a new opportunity for higher education institutions.

...universities increasingly approach the market as a strategic resource, locked into knowledge production, regional development, a high-skills economy and job creation. As revenue from public sources has tightened, so universities have offered themselves as partners with corporations in the national innovation system (Robertson, 1999:18).

As companies begin to describe themselves in terms of knowledge creation (Nonaka and Takeuchi, 1995), so universities respond by “positioning themselves as part of the knowledge economy” (Etzkowitz and Leydesdorff, 1997 cited by Robertson, 1999:18). What has emerged is a set of relationships among universities, industry and government named as the ‘triple helix relationship’ (Etzkowitz, 1994:139). Government policies encourage academic-industry ties in industrialised and industrialising countries, at the national and regional levels. Etzkowitz and Leydesdorff (1997) sum this up as follows:

Universities and industry, up to now relatively separate and distinct institutional spheres, are each assuming tasks that were formerly largely the province of the other. The role of government in relation to these two spheres is changing in apparently contradictory directions. Governments are offering incentives and encouraging academic institutions to go beyond performing the traditional functions of cultural memory, education and research, and to make more direct contribution to ‘wealth creation’ (Etzkowitz and Leydesdorff, 1997:2).

Etzkowitz (2003:116) proposes “an interactive model of innovation” as opposed to a linear model of innovation, emphasising the two-way processes of interactions between industry and academia.⁷ Science parks and industrial liaison offices, which are either

announced the plan to set up ‘the world’s best scientific university’ in Okinawa island, which will make the area “the highest level intellectual cluster in the Asia Pacific region” (*Financial Times*, 13 May, 2002).

⁷ For example, the ‘Cambridge Phenomenon’ is known as the example where the sectoral composition of high technology firms in the area can be traced back to research conducted in the University of Cambridge and associated institutions (SQW, 1988:15). New industries, such as biotechnology and health

located within the university or separately, function as ‘institutional intermediaries’ between the university and industry. These intermediaries as well as the government policies constitute the triple helix relations of the university, industry, government relations.

Higher education’s purposes and mandates are multiple and are under constant pressure for change as its scale and clients change, and even the very definition of higher education has become uncertain. Each of the missions in higher education such as research, scholarship, teaching, consultancy, and community functions calls for different forms of knowledge and different forms of sponsorship and institutional organisation. Higher education is susceptible to influences and challenges from the outside world, particularly in terms of making its teaching, research and development, and screening activities “relevant to the needs of the society and the economy” (Kogan, 1996:120).

From Elite to Mass Education: Massification of the University

Higher education has expanded in most countries with the result that it no longer caters wholly for an elite but provides either “mass or universal higher education” (*The Economist*, 1997). There is empirical evidence, notably, of a growing number of mature students and of those studying part-time along with ‘traditional’ full-time students, and of the growth of continuing professional development (CPD) within universities and colleges (Duke, 1992). The transition from elite to mass higher education is a global phenomenon comprising not only the inner dynamics of national higher education systems but also deeply rooted trends in the character of the state, society, the economy, science and culture (Scott, 1995). It has been posited that the more human capital each

care which draw directly on academic research, are seen to become increasingly important in terms of forging new industry-university linkage.

nation has, the better it becomes at competing in the global economy (*The Economist*, 1997:4).

The growth and diversification of higher education systems have brought new sets of questions. One set of the questions has given new prominence to the issues of 'access and participation'. The expansion of higher education increases the diversity of users –both of students in terms of age, gender, ethnicity and social and educational backgrounds, and of other 'stakeholders' such as employers, and social and community groups (Brennan, 1999:5). Now universities have to ask themselves: What are the needs and demands of these users? ; Which of them will be met by universities and which by other forms of educational institutions? ; And what are the consequences for the university of the access of these 'new' kinds of students? (Brennan, 1999:5)

The second set of questions is about the conceptual debate around 'continuing education', 'lifelong learning' and 'widening access'. As Coffield (2000a: 1) asks: is lifelong learning the big idea which will deliver economic prosperity and social justice, or will it prove to be yet another transient phenomenon like 'recurrent education' which came and went during the 1970s? What are the implications of the expansion of higher education from elite to mass participation associated with the idea of 'lifelong learning'?

The third set of questions concerns the cost and quality of higher education. The notion of accountability to students under the broad banner of quality has been emerging since the 1990s (Middlehurst, 1995:78-9). In many countries, such as France and Germany, the expansion in the number of students has led to the overloading of the system and to an increase in the number of students who drop out of their course. In contrast, the United States has enjoyed the benefits of the expansion of higher

education.⁸ The issues are who pays for the higher education and how the system is funded.

Scott (1995:35) identifies four types of higher education system emerging within the organisational complexity, admitting the simplicity of such a typology to capture the complexity of higher education systems. The first is a ‘dual system’ in which universities are regarded as entirely separate from other post-secondary education institutions and treated differently. The second model is a more dynamic ‘binary system’ where alternative institutions are deliberately established to complement the universities. The third model is a ‘unified system’ in which all institutions belong to a common system and are not formally differentiated. The fourth model is a ‘stratified system’ where higher education is conceived of as a total system and institutions are allocated specific roles within it.

Table 4.2. The four types of higher education systems

Four Types	Examples
A dual system	France, Germany, Netherlands
A binary system	England before 1992
A unified system	Sweden since 1977; England since 1992; Australia since 1988
A stratified system	California’s Master Plan

(Based on Scott, 1995:35)

Thus, the expansion of higher education and the need to regularise and enhance vocational education have led to the creation of ‘binary systems’ in some countries. Britain had a binary system, which was reconstituted in 1992 into a larger ‘unified university system’. Then the distinction between universities and polytechnics was replaced by a new demarcation between higher education institutions (HEIs) and further

⁸ The United States has moved farther than any other countries towards a system of mass higher education, and many of the research universities achieve higher academic standards than ever before. American universities have been able to pluck the very best students from an ever-deepening pool of eligible applicants, which has raised standards, not lowered them (*The Economist*, 1997:6).

education colleges.⁹ Or, as is shown below, a new sub-stratification is emerging within the category of HEIs/universities.

These issues and contrasting evidence surrounding massification of the university present acute questions to the conception and institutional management of the university within the wider higher education system in the twenty-first century. Since the advent of mass higher education, the ideal university depicted by Newman or Humboldt has been unable to accommodate the demands of diversified students' and society's needs. The expansion of higher education, combined with the need to regularise and enhance vocational education, lead to more dynamic relationships between universities and other post-secondary institutions, which vary in different national systems, and each of them has evolved over the time in relation to its state policy.

Being Entrepreneurial

With regard to sources of funding, there are three main streams of income for higher education institutions: the relevant government ministry¹⁰; funds from governmental research councils; and all other sources, grouped together as 'third-stream income', which is next examined further in relation to the notion of accountability.

Whilst there are many different ways of sub-streaming this third-stream income, Clark (2001) categorises 'third-stream income' into three further sub-streams:

- *Other governmental sources* including departments of other levels of government such as departments of regional and city governments.

⁹ In some countries which have dual systems, school leavers are encouraged to go for technical and vocational training. A few German regional governments are confining any further expansion of higher education to the *Fachhochschulen*, which concentrate on technical and vocational subjects. Finland, Switzerland and Austria have also tried to direct more school leavers into such training rather than into traditional universities (*The Economist*, 1997:9).

¹⁰ In the case of the UK, Higher Education Funding Councils (HEFCs) are allocating government money to HEIs. Currently HEFCs are making money available to promote the 'third stream' activities of

- *Private organised sources* including industrial firms, professional and civic associations that promote continuing education, and foundations.
- *University-generated income* including endowments and investments, income from campus services, tuition fees, alumni funding, and income from Intellectual Property Rights (IPRs).

Income streams are key steering mechanisms in university activities. The various third-stream sources identified above clearly bring “different problems and opportunities and different degrees of expenditure discretion” (Clark, 2001:13) and, hence, different forms and conditions of accountability (see Kitagawa, 2003:102-3).

Industrial firms want something for their money, and something is often quite specific; university-industry collaborations involve tough bargaining over contracts, and compromises over whose interest has priority. Government departments, in turn, may offer generous, relatively unearmarked grants, or they may insist on segmental budgeting and tight accounting (Clark, 2001:13).

Many of these areas of accountability are recognisable as the “key purposes” of higher education, and there is now strong pressure on universities to clarify and measure their aims, intentions and claims on the economy and society (Middlehurst, 1995:79). For example, involving firms in the definition of curricula and funding may be one of the ways to strengthen the links between higher education and the labour market, requiring certain forms of accountability.

As already mentioned, higher education in many countries has become more diverse, in terms of the institutions, the programmes and the students who enrol. Therefore, ‘the knowledge’ relevant to running and developing higher education will be “multiple in content, use and ownership”. A further question arises as to how different kinds of knowledge can or should co-exist, be managed and distributed in the context of

universities, with notable recent funding opportunities promoting universities’ reach-out to businesses. Arrangements for this vary in different parts of the UK. See below p.117-9.

a shift from Mode 1 (disciplinary, curiosity-driven research priorities) to Mode 2 (problem-solving oriented) knowledge production (Gibbons et al.,1994).

From the viewpoint of institutional management, this may provide a new opportunity for individual institutions to develop entrepreneurial leadership in order to become “a viable, competitive part of the rapidly emerging international world of learning” (Clark, 2001:11). There is increasing evidence of a pro-active approach being taken by academic institutions. This involves adopting an entrepreneurial role in collaborating with industry, for example, through research contracts, consultancy, licensing of patents, creation of spin-off companies and so on (see HEFCE, 2001a: 6-8). Universities need to develop or retain their institutional autonomy if they are to re-invent themselves as ‘entrepreneurial universities’ (Clark, 1998) within the system of the ‘supervisory state’ (Neave, 1995 a). In other words, individual universities need to develop strategies and instruments appropriate to their own context rather than centrally imposed mechanisms (OECD/IMHE, 1999:28).

Policy-makers, in turn, need to create a policy environment in which institutions are allowed to have a good deal of autonomy if this helps them to be dynamic and strategic and able to move fast enough in international competition. The homogenising, unifying policy instruments that would prevent institutions from experimenting and risk-taking tend to drive overloaded and under-funded universities into being even more conservative and reactive. From a research perspective, only a few studies have examined the relationships between government policies and universities’ entrepreneurship activities in relation to the strategies and policies of universities, especially in considering the geographical dimension of their institutional activities. This is the area to which this thesis aims to contribute.

National Systems of Universities from an International Perspective

The degree of decentralisation of national university systems affects the nature of a university and seems to determine the development of successful linkages at local level.

The extent to which decentralised and regional authorities contribute to the funding, management, and planning of higher education varies greatly between countries.

Broadly speaking, two main models can be identified (OECD/IMHE, 1999:28):

i) the centralised model in which the national government is the main source of funds. e.g. Finland, France, Hungary, Italy, Japan, New Zealand, the United Kingdom

ii) the decentralised model where the regional authorities are the main source of funds. e.g. Australia, Canada, Germany, Spain, the United States.

The United States is a particularly good example of a well developed and regulated higher education system at a sub-national state level, but this is an exception rather than the rule especially as it has developed the localised nature of the universities' funding base.¹¹ In many other national systems of education, many universities' activities which encourage regional engagement are funded from outside core higher education budgets.¹² It can be argued, therefore, that there need to be incentives and funding programmes at regional level, so as to encourage activity within universities which has an explicit regional dimension, and is aimed towards strengthening co-operative activity within the region (OECD/IMHE, 1999:28).

¹¹ The state governments have developed their own state university systems. California's Master Plan for higher education is a notable example which aimed to create a coordinated higher education system out of fragmented university, professional and technical high-school education. It has created a three-tier system in which institutions are allocated specific roles within it (Universities of California, California State Universities, and Community Colleges) (Scott, 1995:35-6).

¹² The case of Germany is interesting, where the financial and administrative responsibility for universities rests with each land, rather than with the national government. Nevertheless, in spite of this regional aspect to funding and administration, there are few requirements for German universities to engage with their regions, which reflects the Humboldtian tradition of German universities enjoying a significant amount of autonomy.

Within the centralised model, there are variations. Devolution processes influence institutional nature and practice. Moscati (1993) records a devolution movement designed to enhance regional economic development in Italy and, in so doing, increasing the diversification of the universities' mission (cited in Davies, 1997). McNay (1994) notes the slow processes of devolution taking place in the UK, with increasing attention being paid to the role of higher education within the regional economy, and attributes this to the influence of the European regions (McNay, 1994:330; see also Chapter 5 p. 137).

It has to be noted that, within the UK devolution process, the situations in Scotland, Wales, Northern Ireland and England are very different with separate funding councils and higher education policies (see Chapter 6). Traditionally highly centralised countries such as France are now taking a more regional approach and one of the main aspects of this policy shift is precisely greater participation by the regions in university development (Drilhon, 1993:96).¹³ The chapter now turns to focus on the UK higher education system.

4-2 UK NATIONAL HIGHER EDUCATION SYSTEM

UK Higher Education System

The nature of higher education¹⁴ in the UK has changed significantly over the past 30 years. The number of students studying at universities and colleges has increased

¹³ It is suggested that in France more measures are undertaken than in the UK to create a unified approach involving local authorities, universities and local bodies (Lawton Smith and De Bernardy, 2001), but this may vary in different localities. Other countries such as Japan seems to be very much centralised in terms of higher education policies and funding as well as in governance of science and technology policies (see Kitagawa, forthcoming).

¹⁴ *Higher Education in the United Kingdom* January 1999.

http://www.hefce.ac.uk/Pubs/HEFCE/1999/99_02.htm#p12 access date 17/07/03.

Higher education courses are generally above the standard of GCE A-levels or National Vocational Qualification (NVQ) Level 3. They include degree courses, postgraduate courses and Higher National Diplomas and Foundation Degrees. Higher education takes place in universities and higher education colleges, and some further education colleges.

dramatically. In the 1960s there were around 200,000 full-time students. This has risen to 2,086,075 students in 2001/2.¹⁵ The age of undergraduates has changed too. Formerly these were largely school leavers studying full-time. The student population now includes large numbers of mature and part-time students including some on distance learning programmes, not only at the Open University.

Higher education is part of 'lifelong learning', which is not limited to the compulsory school years, but extends through an adult's working life and sometimes into people's retirement. There are two levels of education after school, further and higher education as rather schematically shown in the Table 4.3.

Table 4.3. Education Structure of UK

Pre-school	Primary and Secondary education	Further education	Higher education	
Not compulsory	Compulsory school education	6 th form Further Education Colleges	Higher Education Colleges, Universities	Work-based learning; distance learning etc.
3-4 years	5-16 years	16-17 years	18+	21+
Lifelong learning/continuing education				

Universities are diverse, ranging in size, mission, subject mix and history.¹⁶ In England, the older universities were established by Royal Charter or statute.¹⁷ Former polytechnics were given the status of universities under the Further and Higher

¹⁵ Student population in the UK HE sector. Source: *HESA Students and HESA First Destinations 2001/02*. <http://www.scop.ac.uk/scopdata.asp?page=hcolleges§ion=11> access date 11/10/03.

¹⁶ Most British universities can be classified into 5 categories:

- Ancient universities -- universities founded before the 19th century;
- Red Brick/Civic universities - universities founded in the 19th and early 20th centuries;
- Glass Plate universities - universities founded in the years after World War II;
- New universities - the universities formed when the distinction in status between polytechnic colleges and universities was abandoned in 1992; and
- Distance learning universities, the first of which was the Open University, founded in 1968.

Education Act 1992. These are sometimes called 'new' universities.¹⁸ The existing 'old' universities include many founded in the 1950s and 1960s, the 'civic' ('civic' universities were founded by Royal Charter in major cities in the 19th and early 20th centuries) universities and the first colleges of the University of Wales established in the nineteenth and early twentieth centuries. The Universities of Oxford and Cambridge date from the twelfth and thirteenth centuries, and three Scottish universities, St Andrews, Glasgow and Aberdeen, have existed since the fifteenth century.¹⁹

Higher education institutions, including both universities and higher education colleges, are funded by higher education funding councils. Universities have their own degree-awarding powers whilst higher education colleges don't have their own degree-awarding powers. As mentioned in Chapter 1, in this thesis, the term university includes all higher education institutions as the term is used in the UK. However, when university is specified, the term only includes a 'university' as specified by the 1992 Act.

Funding. The major sources of funding for higher education institutions are:

- A central government grant paid through one of the three Higher Education Funding Councils (HEFCs) in England, Wales and Scotland and the Department of Education in Northern Ireland
- Tuition fees paid by students or Local Education Authorities (LEAs) to fund students' teaching costs

¹⁷ The Privy Council (the Privy Council advises the Queen on the approval of Orders in Council including the granting of royal charters and incorporation of universities) has the power to grant university status to an institution which has the necessary characteristics.

¹⁸ There are conflicting interests among universities especially in the area of research funding, with differences in the activities of interests between 'new' and 'old' universities. Although the 'binary system' was abandoned in 1992, an assumption has been made about the different roles that the new and the old universities play. The contribution that the *new* universities can make to regional economies was identified as 'access to local students', 'supporting small and medium sized enterprises (SMEs)' and 'meeting regional skill requirements', while the *old* universities regarded their main roles as 'attracting non-local students', or 'engaging in research collaboration with industry and technology transfer' (Waters and Lawton Smith, 2002:636). The government encourages institutions to "choose the role which best suits their strengths, with public funding encouraging such choice, by providing incentives for institutions to become more entrepreneurial" (OST, 2002).

¹⁹ They range in size from around 4,000 students (University of Abertay Dundee) to 28,000 students (Manchester Metropolitan University). The combined schools and colleges of the University of London have around 100,000 students, and the Open University, which teaches largely by distance learning, is even larger. There is one privately funded university - the University of Buckingham, which runs mainly business and management courses.

- Grants from research councils which fund individual research projects and support related postgraduate training
- Private sources such as charities and industrial links who fund specific research programmes or buildings/departments.

Total revenue for higher education in the UK was around £11.1 billion in 1996-97 (HEFCE, 1999). Around 63 per cent of this comes from the UK government or the EU.²⁰ The four UK funding bodies - the Higher Education Funding Council for England (HEFCE), the Higher Education Funding Council for Wales (HEFCW), the Department of Education, Northern Ireland (DENI) and the Scottish Higher Education Funding Council (SHEFC) - provide the largest amounts.

There is increased government interest in ‘incentive funding’. Incentives were thought of as “tools that were integral to the academic community and were used to cater to its internal concern with maintaining academic quality” (Bleiklie, 2001,14). It is since the late 1980s that conspicuous political use of incentive tools started. For example, a shift in the direction of extensive and active use of incentive tools began with the introduction of the Research Assessment Exercises (RAE) after 1985/6 (see below, p.114). More recently, the funding councils in the UK have developed a range of initiatives with geographical implications, serving as incentives for universities to work with their regions and cities (see Chapter 5).

The funding bodies allocate most of their funds by formula for teaching and research. The distribution of funding for teaching depends largely on the number of students and the subjects which an institution teaches. Nearly all funding for research, however, is related directly to the quality and volume of research. Universities and

²⁰ There are a number of European funds dedicated to research activities. For example, the aim of the Framework Programmes introduced in the mid-1980s by Directorate General XII (Science, Research and Development) of the European Commission has been to stimulate cooperation between universities, laboratories and industry across Europe in pre-competitive research. DG XVI (Regional Policy) runs innovation programmes targeting less-favoured regions (LFRs) which involve the higher education sector (see Chapter 5). There are EU programmes under Directorate of Education and Culture targeting

colleges also generate funds from a wide variety of private sources, such as sponsorship, fee-paying students, conferences and donations, and through providing services.²¹

The four UK higher education funding bodies are funded by and responsible to the Westminster Parliament. Their role includes:

- Allocating funds for teaching and research;
- Promoting high quality education and research;
- Advising Government on the needs of higher education;
- Informing students about the quality of higher education available;
- Ensuring the proper use of public funds.

The funding bodies work in partnership with other organisations such as the task representative bodies (e.g. Universities UK, the Quality Assurance Agency for Higher Education, and the Higher Education Statistics Agency).

The total amount of money to be allocated is decided by central government effectively in the Treasury. Guidance and priorities are given by the government but it is the sole responsibility of the funding bodies to allocate money to specific institutions. The funding bodies operate at arm's length from central government. The table below shows the relationship between central government and the higher education funding bodies.

transnational higher educational exchanges such as ERASMUS and Socrates, and continuing vocational training (e.g. Leonardo programme, see P.170), which covers the higher education sector.

²¹ Income from overseas student fees, for example, was around £563 million in 1996-97.

Table 4.4. Central Government and the Higher Education Funding Bodies

England	Northern Ireland	Scotland	Wales
Department for Education and Skills (DfES)	Northern Ireland Office	Scottish Office	Welsh Office
	Department of Education Northern Ireland (DENI)		
Higher Education Funding Council for England (HEFCE)	Northern Ireland Higher Education Council (NIHEC)	Scottish Higher Education Funding Council (SHEFC)	Higher Funding Education Funding Council for Wales (HEFCW)

With the exception of Northern Ireland, the funding bodies act as intermediaries between the government and higher education institutions. As well as allocating funds to institutions, they provide advice and policy guidance to government and promote good practice in the HE sector. NIHEC is an advisory body set up to advise DENI on the planning and funding of HE in Northern Ireland. The HEFCE also advises DENI.²²

The four HEFCs have established close links with each other. The funding bodies also collaborate on a number of initiatives designed to improve teaching and learning. Funds from central government are allocated to institutions against a funding formula, central to which is the number of students studying in a given institution. Subjects are allocated to one of four broad groups which represent the different costs of providing different types of course.

The Funding Councils in England, Wales and Scotland and the Department of Education in Northern Ireland run RAE, the main purpose of which is to improve the quality of research through the selective allocation of funds from central government according to the quality of research in institutions. The RAE is carried out on a regular

²² Sir Howard Newby, Chief Executive of HEFCE states its role as follows:

"In carrying out our role we act as a mediator between government and universities and colleges. We robustly represent the needs of higher education to government, and convey the views of government to higher education. In many respects it is difficult for people to judge the effectiveness of our role in advancing the interests of higher education, because much of our advice to government has to be given in confidence" <http://education.guardian.co.uk/higher/news/story/0,9830,998036,00.html> access date 16 July 2003.

basis (every four to six years) by the Funding Councils for England, Scotland and Wales and the Department of Education in Northern Ireland. The last RAE was carried out in 2001.²³

Governance and Management. Higher education institutions are legally independent. Their governing bodies are responsible for ensuring the effective management of the institution and for planning its future development. They are ultimately responsible for all the affairs of the university or college. In general terms, the management structure of a university is similar to that of a private sector institution, incorporating positions such as the Vice-Chancellor or Principal whose equivalent in business would be the Chief Executive. As the director of a company would work closely with a Board of Directors in the world of business, so the Vice-Chancellor or Principal works closely with the governors of the institution. The internal government of a university differs depending upon whether the institution was established before or after 1992.²⁴

Teaching, Research and Third Stream Activities

As already mentioned, universities have three main areas of activities: firstly, research; secondly, teaching; and thirdly, the so-called third stream activities (these are also called

²³ There are two main purposes of the research assessment. One is to support the resource allocation models of the funding councils, and the other is to provide comprehensive and definitive information on the quality of UK research in each subject area (Roberts review, 2003, para 10). The RAE has been run in 1986, 1989, 1992, 1996 and 2001. The format has developed over those cycles. Earlier cycles took publication volume into account and were blamed for a supposed UK tendency to produce quantity at the expense of quality (Universities UK, 2003:33). Review of research assessment reported by Sir Gareth Roberts to the UK funding bodies was issued for consultation in May 2003. The review was commissioned by the UK higher education funding bodies to report on the future for research assessment in the UK. <http://www.ra-review.ac.uk/reports/roberts.asp> access date 05/10/03.

²⁴ If the university was established before 1992, the governing body is the Council (in Scotland, the Court) which normally has responsibility for the conduct of all the affairs of the university. Membership of the Council, or Court, comprises officers of the university, elected staff members and student representatives, as well as members who have been appointed by local authorities, affiliated institutions, and others. If the university was established after 1992, the governing body is the Board of Governors which has responsibility for the conduct of all the affairs at the university. Membership of the Board of Governors comprises independent members, co-opted members and members of staff, of the student body and of the local authority.

third strand, third-leg or third-arm activities). Each individual institution has its own strengths in and emphases on each of these activities.

Research. Research in UK universities is seen to be “fundamental to the development of knowledge and understanding and to wealth creation” (HEFCE, 1999).²⁵ Most of Britain's long-term and strategic research is carried out in universities. Total annual funding for research is around £2,456 million (1999). The public funding of research in universities and colleges is provided under the ‘dual support system’.²⁶ The funding for infrastructure (salaries of ‘permanent’ or established academic staff, premises, central computing and library costs, for example) is supported by the four HEFCs. This amounts to £814 million (1999). The direct costs of specific projects are provided by the six research councils, which allocate around £525 million (1999) per year for research in universities and colleges. Other projects are supported by charities and foundations, industrial firms, the European Union and UK government departments.

The government takes a long-term view of research. It allocates its funds for research projects through the Office of Science and Technology (OST). The OST provides a co-ordinating role for project funding and makes allocations to the research councils.²⁷ It takes into account government policy such as the Foresight Programme.²⁸

²⁵ There is a strong tradition of research in all academic subjects. The UK's population makes up only 1 per cent of the global total, yet over 4.5 per cent of the world's research effort is carried out by British scientists and academics and 8 per cent of scientific publications are published. These papers receive 9 per cent of citations (DTI, 2003:6). British researchers regularly win international prizes for their work.

²⁶ As stated in *Investing in Innovation* (DTI, HM Treasury, DfES, 2002), the Government believes that the dual support systems is the most effective way to fund university research. Under the dual support system, research council grants have never been intended to cover the full cost of research. The remainder must be found by HEIs from their other sources of income. For many HEIs, a major element of this other income is Funding Council block grant support for research (quality related research funding: QR) and infrastructure (Science Research Investment Fund: SRIF).

²⁷ The six research councils are as follows:

Biotechnology and Biological Sciences Research Council (BBSRC)

Engineering and Physical Sciences Research Council (EPSRC)

Economic and Social Research Council (ESRC)

Medical Research Council (MRC)

Natural Environment Research Council (NERC)

Particle Physics and Astronomy Research Council (PPARC)

Over 90 per cent of research funding allocated by the funding councils is distributed selectively, according to the quality of research through the aforementioned RAE.²⁹

Teaching. There are over 2 million students in UK universities and colleges. They are split by mode (full-time or part-time) and level of study (undergraduate or postgraduate). The proportion of male to female students is roughly equal. The age of new students has been increasing over recent years. In the UK nearly 30 per cent of full-time first degree students are 21 or over when they start their course. In addition there are over 40,000 students studying further education at UK universities and colleges. The level of participation in higher education by school leavers has increased rapidly over the past few years. Today, by the time they are 21 years old, 33 per cent of young people will have entered higher education across the UK. The proportion in Scotland is higher.

The government and the funding bodies are seeking to broaden access to and participation in higher education, so that equal opportunities are available for all, including people from ethnic minorities, people with special needs, and people from poorer socio-economic backgrounds. The government targets 50 per cent of people aged between 18 and 30 years old to enter higher education by the year 2010.

Third Stream Activities. In England, HEFCE, in partner with OST, grants project-based funding for commercialising university research and has impacts in terms of infrastructure for these activities (e.g. Higher Education Innovation Fund, HEIF). In Wales, Welsh Development Agency operates a Knowledge Exploitation Fund with

²⁸ The Foresight Programme aims to improve the competitiveness of the UK economy and to enhance the quality of life, by bringing together business, the science base and government to identify and respond to emerging opportunities in markets and technologies.

²⁹ Because of the way in which institutions' QR funding is calculated with reference to RAE outcome, HEIs comprised mainly or wholly of lower rated research departments may not have sufficient resources, whether from Funding Councils or elsewhere (DTI, 2003:20).

similar objectives. In Scotland, SHEFC created a Knowledge Transfer Grants scheme to help universities invest in infrastructure for knowledge transfer activities. These are examples of incentives for third stream activities (see Chapter 5 p.164-5).

The definition of ‘third stream’ has evolved over the last few years as the various actors have struggled with the entwined issues of funding and measurement of the third stream.

As with much else, the third stream can only be understood in the context of the value propositions an institution makes to society – its contract with society - in the jargon, its Mission (Padfield, 2003).³⁰

Thus the process of defining third stream, and devising metrics for it, has become a major strategic exercise, which will have a profound impact upon how universities come to see their missions in future years. There is a tendency to reduce the metrics of these activities towards ‘simple’ indicators of IP commercialisation. However, there is a realisation that what is at issue are the hugely complex processes by which universities achieve social and economic impacts within society, beyond the core businesses of teaching and research. It is important to note that a wider and longer-term indicator is required in order to assess the institutional contexts more appropriately and assist decisions not only for policy makers but also institutional managers.

In the light of this, it is important to make a distinction between the *outreach activities* and *outcome* of these activities. The key question, from the point of view of regional development, concerns the relationship between regional *outreach* activities per se and the delivery of regional *outcomes*, namely, their impact on regional development. A distinction also has to be made between *outcomes* and *outputs* (e.g.

³⁰ Christopher Padfield, “Identifying and measuring a university's third stream impact is straightforward-discuss!” http://www.unisdirect.com/conference/programme/presentations/christopher_padfield.pdf access date 31/08/03.

number of spin outs, number of licenses).³¹ There are a **variety of ways, many of them indirect, in which research and other university activities affect economic performance and society at large.** Thus, the process of defining ‘third stream’, or ‘commercialising activities’ and devising metrics is a major strategic exercise with profound impact on how universities see their missions (Molas-Gallart, 2004 forthcoming).

HE Markets and The White Paper, *The Future of Higher Education*

Box 4.1 below summarises a number of white papers, acts and the main government reports since the 1990s which have affected the nature of higher education in the UK.

Box 4.1. UK White Papers, Report and Acts on Higher Education and Learning

1991 White Paper on Higher Education.
1992 Further and Higher Education Act
1996 Dearing Report Review³²
 White Paper, *Learning to Compete*
1997 National Committee of Inquiry into Higher Education (NCIHE), *the Dearing Report*
1998 Teaching and Higher Education Act³³
1999 White Paper, *Learning to succeed: A New framework for post-16 learning*
2003 White Paper, *The Future of Higher Education*

A government White Paper in 1991 recommended expansion of student numbers, and proposed the transformation of polytechnics into universities. This was intended to create: 1) a level playing field for institutions and 2) a state controlled quality system. This 1991 White Paper was based on the essential assumption that the system should be exposed to market forces and therefore a good former polytechnic should be able to rise up the league tables and similarly a struggling former university should fall down the league table. However, there never was a level playing field as old universities had

³¹ Professor John Goddard gave a useful comment regarding these points [November 2002].

³² The Committee was appointed with bipartisan support on 10 May 1996 to make recommendations on how the purposes, shape, structure, size and funding of higher education, including support for students, should develop to meet the needs of the UK over the next 20 years in recognition that higher education embraces teaching, learning, scholarship and research. *Higher Education in the Learning Society*, the report of the National Committee of Inquiry into Higher Education (NCIHE), chaired by Sir Ron (now Lord) Dearing was published in 1997.

³³ New system of HE student loans and fees were introduced, largely abolishing student grants.

inherited location, buildings, teaching staff and reputation and therefore still score much better than the former polytechnics.³⁴

In January 2003, the Department for Education and Skills (DfES) published another White Paper, *The Future of Higher Education*. This White Paper proposes the biggest increase in spending on higher education since the 1960s – it attempts to cater for all students including protecting disadvantaged groups and acknowledging part-time and mature students.³⁵ This is in line with the aforementioned government's pledge to extend the participation of all 18 to 30 years-olds in higher education to 50 per cent by 2010.

The 2003 White Paper recognises that UK higher education is a diverse system, and it further recognises that the government has been partly responsible for failing to recognise the different roles of universities.³⁶ The definition of a university has been substantially widened from the 1992 Further and Higher Education Act based on the 1991 White Paper. Expansion is predicated upon diversity and difference between students and between institutions. The 2003 White Paper recognises the benefits of higher education as the key to the economic health of the nation and emphasises the importance of knowledge transfer. It says that the measures put forward by the White Paper will:

³⁴ Based on notes from a presentation given by Prof. Mike Shattock, a seminar on the White Paper, Institute of Education, University of London, February 2003.

³⁵ It is argued that, compared to those without higher education, graduates can expect higher employment rates and higher salaries and, thus, they can expect on average a private rate of return of 10 percent to 14 per cent on their spending/investment in higher education [based on notes from a presentation given by Prof. Gareth Williams, a seminar on the White Paper, Institute of Education, University of London, February 2003].

³⁶ The central government policy set out in the White Paper on higher education posits the diversification of institutions. The White paper states that, for individual universities, "to be really successful, universities must be free to take responsibility for their own strategic and financial future" (DfES, 2003).

Bring major improvements to the funding of research and knowledge transfer, boost world class excellence and strengthen the work of universities in supporting the regional economies (DfES, 2003:5).

Over the next 3 years the government is promising an increase of over 30 per cent in research spending in real terms. In order to encourage higher education's links with business, it is proposed that the government strengthen the Higher Education Innovation Fund (HEIF) (see p.128, 132-3). The corralling of various government departments' schemes into an explicit funding stream for the development of third stream activity has certainly boosted HEIs' engagement with business.

The core issues in the 2003 White Paper are said to be the balances between 'equity' and 'efficiency', and between 'research' and 'teaching', and also the feasibility of these proposals. Some researchers argue that most of the proposals are about further stratification of the higher education system. There is apparently a gap between the policy thinking represented by DfES and HEFCE, and the interest of individual universities. According to Sir Gareth, who sits on the board of the HEFCE, the problem was compounded by "a lack of integration between the English funding council and its constituent universities" (Davies, *THES*, 21 March 2003).

Some of these issues will be explored in Part III (e.g. Chapter 6 p.203). Below, to provide further background to the issues, the proposed transformation of the higher education system in the UK is viewed from recent historical and geographical perspectives.

4-3 THIRD-STREAM ACTIVITIES, OUTREACH AND THE COMPETITIVENESS AGENDA IN THE UK

From "White Heat" to "The Cambridge Phenomenon"

It has long been a concern of the UK government that its industrial base has been shrinking in relation to that of other countries. Harold Wilson's call at the 1963 Labour

Party Conference for the modernisation of the economy and his challenge “in the *white heat* of the scientific and technological revolution” is well known. The Wilson government of 1964-1970 achieved many initiatives regarding science, technology and industry involving attempts to bridge the strung-out nature of academic-industrial links and of innovation in general. However, after the advocacy of ‘white heat’ change, the separation of science from technology and of universities from manufacturing production continued (Massey, et al. 1992).

The 1970s were a severe period of economic stagnation for the UK. In 1979, Margaret Thatcher imposed tough monetarist policies on the nation, with the overriding goal of shrinking the role of the government, which affected universities. The 1980s were a long decade of falling government support for universities with “increasing requirements for reporting and rigorous review” (Hatakenaka, 2002:66). There is no doubt that the 1980s were a period of severe cutbacks in government funding for higher education, at a time of increasing pressure from student numbers. This was one of the most important factors that promoted university-industry relationships in the UK, along with other government policy initiatives (Hatakenaka, 2002:70; see below for the government funded programmes).³⁷

Universities’ interest in working closely with industry is, for example, shown in the establishment of science parks nearly all located beside universities³⁸: the number of science parks grew from one in Cambridge in 1972; 2 in the 1980s; up to 40 in 1992;

³⁷ There were few vibrant domestic companies looking for scientific ties with universities, but instead UK universities were to meet an increasing number of foreign firms, most notably from Japan, with interest in locating their R&D facilities in the UK (Hatakenaka, 2002:74). Cf. Hashimoto (1999) describes how Japanese industry dealt directly with foreign technology suppliers, through the purchase of patents and consulting services, thereby eliminating the need for Japanese universities and academics.

³⁸ According to UKSPA, a science park is a property-based initiative which has formal operational links with a university or other HEI; is designed to encourage the formation and growth of knowledge-based businesses and other organisations normally resident on site; and has a management function which is actively engaged in the transfer of technology and business skills to the organisations on site (UKSPA, 1995 cited from Massey et al., 1992:14).

and about 50 in 1997 (Howells, et al., 1998; Massey et al., 1992:16). Licensing activities by universities became prominent after the break-up of the British Technology Group in 1986, which was in effect the British equivalent of the US Bayh-Dole Act. Some universities have created a limited company to manage their exploitation activities, outside the universities, but wholly owned by the universities (e.g. Oxford, Imperial, Sheffield, Birmingham, Edinburgh) whilst others are keeping all the important activities within the university (e.g. Cambridge, UCL, Bristol, Warwick, Glasgow). ³⁹

Massey et al. (1992:213) argue that at the centre of science park development and its regional dimension is its nature as *property development*. Much of the private-sector financial participation is centred far more on the logic of accumulation through real estate than any concerns about production. The development of science parks in the UK is inherently related to the issue of ‘North-South’ divide across the country mentioned in Chapter 5 (p.139). In the areas which are already prosperous, especially in the south and east, science parks are profitable for the private sector; in the north, the public sector struggles to provide some counter-balance in the form of ‘partnerships’ with the public subsidising the private, despite the latter undermining the former’s initial objectives (Massey et al., 1992:12). It is noted that there is also an ‘innovation divide’ in terms of firms’ technological progressiveness and capacity to assimilate new knowledge.

In 1985, a report entitled *The Cambridge Phenomenon* was published by a private consulting firm (Segal Quince and Partners, 1985) which concluded that informal networks around Cambridge University were critical to that phenomenon. The successful local development, reliant on highly concentrated technology start-ups principally linked to the University, epitomised one of the models of university-based

³⁹ ‘Does a university need a limited company to manage its commercial exploitation opportunities?’

local economic development based on relations between *universities* and high-technology small firms. The phenomenon has provided a successful model of university-based, endogenous innovation-centred growth in UK local economic development.⁴⁰

Knowledge Transfer and University-Industry Links: Early Days

The government has been encouraging universities to serve economic needs through several funding programmes. One of the oldest, well-established programmes is TCS (formerly the Teaching Company Scheme, and since June 2003 called Knowledge Transfer Partnerships), which has been in operation since 1975. TCS supplied funds for academics to provide technology transfer support to companies through student placements. TCS was started in 1975 as a joint Science Research Council/Department of Industry initiative, and was conceived as the engineering equivalent of the teaching hospital for trainee doctors. Since then, the scheme has expanded considerably and now awards around £23million a year in new grants.⁴¹ The objectives of TCS are “to strengthen the competitiveness and wealth creation of the UK by the stimulation of innovation in industry through collaborative partnerships between the science, engineering and technology base and industry:

- To facilitate the transfer of technology and the spread of technical and management skills, and to encourage industrial investment in training, research and development;
- To provide industry based training, supervised jointly by personnel in the science, engineering and technology base and in business, for high calibre graduates intending to pursue careers in industry;

Ederyn Williams, December 2002. Transcript.

⁴⁰ In 1998, there were some 37,000 high technology jobs in the Cambridge area comprising 11 % of local employment. The main high-tech activity is R&D, supplying 24 % of total high-tech employment, electronics has 17 %; computer services 13%; scientific instrumentation 8%; and biotechnology 7% (Cooke, 2002:145).

⁴¹ TCS ‘Associates’ (students) work on in-company projects, typically for two years. They are supported by a network of regionally-based TCS consultants and are supervised by a member of staff in the research and higher education sector. Whilst the focus of the scheme was initially on big companies, from about 1990, more than two-thirds of projects have been in SMEs.

- To enhance the levels of research and training in the science, engineering and technology base that is relevant to business by stimulating collaborative research and development projects and forging lasting partnerships between the science, engineering and technology base and business”.

TCS can be characterised as a technology, knowledge and skills transfer scheme utilising “People as Vectors of Technological Capability” (Arnold and Teather, 2001).

In 1988 two research-based programmes, namely, Collaborative Awards in Science and Engineering (CASE) and LINK, were started. CASE is a programme that provides subsidy support for graduate students undertaking projects in industry. LINK is the government's principal mechanism which started in 1988 for promoting partnership in pre-commercial research between industry and the university research base. It aims to stimulate innovation, wealth creation and improvement in the quality of life.⁴²

Competitiveness, Innovation and Universities

Throughout the 1990s, concerns with economic competitiveness at both the national and European levels strengthened the efforts to increase levels of innovation. Since the mid-1990s, a series of UK White Papers assumed the important role of knowledge and innovation in the so-called knowledge economy. For summary, see Box 4.2.

⁴² Centrally funded postgraduate education and research training (particularly from the Research Councils) has also burgeoned through other schemes such as the post-experience Masters degree, the Integrated Graduate Development Scheme (IGDS), and Post-graduate Training Partnerships (PTPs). Since the mid-1990s support for all award-bearing continuing education has been mainstreamed into the HEFCE block grant, whereas other provision may be bid for from the very limited HEFCE Development Funds (Potts, 2002:989).

Box 4.2. The UK Government White Papers Emphasising the Role of Higher Education in National Competitiveness

1993 Science and Technology White Paper, *Realising our Potential: A Strategy for Science, Engineering and Technology* (DTI)

1998 The Competitiveness White Paper, *Our Competitive Future: Building the Knowledge-driven Economy* (DTI)

2000 The Science and Innovation White Paper, *Excellence and Opportunity* (DTI)

2001 The Enterprise, Skills and Innovation White Paper, *Opportunity for All in a World of Change* (DTI/DfEE)

2002 *Investing in Innovation: A strategy for science, engineering and technology*. (DTI, HM Treasury, DfES)

2003 The White Paper, *The Future of Higher Education* (DfES)

In 1993, the Science and Technology White Paper *Realising our Potential: A Strategy for Science, Engineering and Technology* the first science white paper over 20 years, was published. In DTI, a new unit was established to focus on innovation issues, in which university-industry linkages have been one of the primary interests (Hatakenaka, 2002:73). The 1998 Competitiveness White Paper, *Building the Knowledge-driven Economy* (DTI) stipulated the importance of science and technology in an increasingly competitive world.⁴³ The Science and Innovation White Paper in July 2000 (DTI) and the Enterprise, Skills and Innovation White Paper (DTI/DfEE) in February 2001 both recognized the crucial role of universities in the economy as powerful drivers of innovation and change.

The role of our universities in the economy is crucial. They are powerful drivers of innovation and change in science and technology, the arts, humanities, design and other creative disciplines. They produce people with knowledge and skills; they generate new knowledge and import it from diverse sources; and they apply knowledge in a range of

⁴³ “The Government must promote competition, stimulating enterprise, flexibility and innovation by opening markets. But we must also invest in British capabilities when companies alone cannot: in education, in science and in the creation of a culture of enterprise. And we must promote creative partnerships which help companies: to collaborate for competitive advantage; ...to benchmark their

environments. They are also the seedbed for new industries, products and services and are at the hub of business networks and industrial clusters of the knowledge economy (DTI/DfEE, 2001).

A substantial increase in science expenditure has been announced recently.⁴⁴

Outreach, Entrepreneurship, and the Culture of Enterprise

Throughout this process in the 1990s, it is argued, the purpose of universities' research was consolidated around a heavily instrumentalist economic discourse, with the sole rationale of raising national competitiveness through improving the science base (Henkel and Little, 1999). As part of this endeavour, there has been an effort to increase the capacity to convert excellence in basic research conducted in universities into successful products and process innovations. For example, the first Foresight report in 1995⁴⁵ recommended further linking of government funding to strategic areas. In 1997, Faraday Partnerships were started which link businesses, scientists and engineers in universities, research organisations, and capital providers on collaborative research projects and commercialisation processes.

performance against the best in the world; and to forge alliance with other businesses and with employees" (Blair, 1998 in Foreword, Competitiveness White Paper, 1998).

⁴⁴ The government will increase spending on research in 2005-06 by £1.25 billion compared to 2002-03, which is around 30 per cent increase in real terms (DfES, 2003:6). The 2002 spending review announced the largest sustained growth in science expenditure for a decade, £1.25 billion extra a year by 2005-06, to ensure that the science and engineering base grows and flourishes and makes an increasing contribution to national prosperity. Some of this new money is an increase in resources for knowledge transfer from the science base. Spending on that is to be increased over the next three years from a baseline of £64 million in 2002-03 to £114 million in 2005-06.

⁴⁵ The Foresight-LINK programme supports academic-industry projects that address the priorities laid out in the Foresight exercise.

Box 4.3. Recent UK National Initiatives with Universities to Promote National Competitiveness

Foresight-LINK programme

Faraday Partnerships

1998 University Challenge Fund with funding from the Treasury, Wellcome Trust and Gatsby Charitable Foundation

1999 Science Enterprise Challenge; 13 Science Enterprise Centres (SECs)

1999 Cambridge-MIT Institute (CMI)

2000 Higher Education Reach - out to Business and the Community (HEROBC)

–launched 1999 - first tranche of £60 million for three-year projects in 87 institutions or consortia

–second round £22 million in 2000 with 50 awards (11 collaborative projects)

2001 Higher Education Innovation Fund (HEIF)

- launched 2001

-new round August 2004; consultation going on until 24 October 2003. e.g. Knowledge Exchange

Higher Education Active Community Fund (HEACF)

2003 White Paper, *The Future of Higher Education*

2003 Review of research assessment consultation

2002-2003 Lambert Review (on university-industry links and university governance)

In 2000, the HEFCE, in partnership with other bodies, initiated the new third-stream of funding, complementing the Council's existing grant for teaching and research. The objective was to reward and encourage HEIs to enhance their interaction with business, industry and the public services and, in so doing, to contribute to economic growth and competitiveness especially in the HEIs' home regions. The scheme was originally called the Higher Education Reach-out to Business and the Community Fund (HEROBC), but there is now a funding stream in this same area with the title Higher Education Innovation Fund (HEIF). Similarly, following HEROBC, the Higher Education Active

Community Fund (HEACF), was set up intended to enhance the key role played by HEIs in the local community.⁴⁶

It is important to note that in the first round of HEROBC funding, each institutional need was relatively respected and the amount of money allocated to institutions varied significantly, resulting in different levels of institutional resources and in their impact on the regions. In the later round of HEROBC and in HEIF, more regional or inter-regional collaborative bids were made. The January 2003 HE White Paper emphasised a more regional focus for HEIF to support economic development. It is intended that HEIF is to become a permanent third stream of funding, which will influence the operation of universities substantially although it is still a small proportion of the total public funding available to universities (see below, p.131).

There are several other measures sponsored by the OST. OST manages a number of schemes aimed at supporting entrepreneurship training, commercialisation and development of links between the universities and business. These include: HEIF; University Challenge Seed Fund; Science Enterprise Challenge; and the Public Sector Research Exploitation Fund (PSRE). A total of £120m over three years was allocated under these schemes in 2001.

The objectives of University Challenge Seed Fund, launched in June 1998, to promote entrepreneurship,⁴⁷ are:

⁴⁶ “Higher Education Reach-out to Business and the Community Fund (HEROBC)”
<http://www.hefce.ac.uk/Reachout/herobc.htm> access date 22/07/02.

“Higher Education Innovation Fund (HEIF)”
<http://www.hefce.ac.uk/reachout/heif/default.htm> access date 04/02/03.

“Higher Education Active Community Fund (HEACF)”
http://www.hefce.ac.uk/pubs/hefce/2001/01_65.htm access date 28/02/03.

⁴⁷ The University Challenge Fund Scheme was announced by the Chancellor in March 1998 as a collaboration between the government (contributing £25 million), the Wellcome Trust (contributing £18 million) and the Gatsby Charitable Foundation (contributing £2 million) to assist universities in turning research projects into viable businesses. The total funding available was therefore £45m. The first University Challenge Competition created 15 seed funds allowing 38 institutions (31 universities and 7 institutes) access to investment capital. The total value of the funds created (including the 25 per cent

- To allow winning universities ready access to seed-fund capital to turn the results of research into potential new businesses and /or products;
- To catalyse the activity in seed funding of high technology, an area still not well served by the UK Venture Capital industry;
- To educate UK universities in the investment process and bring the financial community closer to universities;
- To provide stimulus to entrepreneurial activities in the university sector.

Launched in February 1999, the Science Enterprise Challenge, to encourage the transfer of science and technology innovation in higher education to the business sector aims:

- To raise awareness of the importance of business enterprise at all levels within Universities, including both students and staff, and to legitimise commercial activity as a valid aspect of academic life;
- To foster understanding and co-operation between academics and the business world to ensure the commercial exploitation of technological innovation; and
- To establish a network of centres in UK universities, specialising in the teaching and practice of commercialisation and entrepreneurialism in the field of science and technology.

Twelve Science Enterprise Centres (SECs) were established in UK universities in the first round of the competition in 1999/2000, with £28.9million of government funding. The Centres support the teaching and practice of entrepreneurship among science faculty and students, and promote links between universities and business. Awards worth £15million for a further round of the competition were announced on 1st October 2001, involving some 39 institutions. This funding helped establish a new centre and expand the twelve existing Science Enterprise Centres set up to promote a culture of enterprise and facilitate the commercial exploitation of scientific research.

All the thirteen SECs now established under the Science Enterprise Challenge are members of the National Competitiveness Network (NCN) and linked to the Cambridge-MIT Institute (CMI), an international universities alliance established in

matching funds required from the participants) was in excess of £60 million. The seed funds established from the first competition have been between £1m and £5m with the ability to make single investments to a maximum of £250,000 per investment. <http://www.ost.gov.uk/enterprise/knowledge/> access date 05/04/03.

1999.⁴⁸ Several SECs form consortia of regional universities with support from RDAs, providing various provisions including university-based entrepreneurship education (see Chapters 5 and 8, and Appendix 5.2). Thus the Centres are organised mainly regionally but they operate within national and international networks.

The White Paper, *The Future of Higher Education*, published in January 2003 announced the expansion of HEIF, with funding from OST to stimulate enterprise from research across the regions (DfES, 2003:25). The OST is going to put the money for Science Enterprise Centres and University Challenge into a single HEIF, with investment rising to £90 million per year by 2005-6. This new expanded HEIF, on which the OST and HEFCE will be working together, will have two main aims. One is to build on the success to which all universities have contributed in knowledge transfer. The second is to further broaden the reach of these activities particularly through support for ‘less research-intensive’ university departments. The White Paper proposes to create a network of around 20 Knowledge Exchanges as a new strand of the HEIF, which will be exemplars of good practice in interactions between “less research-intensive institutions and business and underline the distinctive mission of these” (DfES, 2003:39).

Outreach activities of universities to industry and the community promoted by this so-called third stream funding seem to have enormous potential for universities, and for the economy and society. There is increasing evidence of a pro-active approach being undertaken by academic institutions, adopting an entrepreneurial role in collaborating with industry, for example, through research contracts, consultancy, licensing of patents, creation of spin-off companies and so on (HEFCE 2001a; 2003a;

⁴⁸ The University of Cambridge (CU) and the Massachusetts Institute of Technology (MIT) have established the Cambridge-MIT Institute (CMI), funded by Her Majesty’s Government and private

Davies, 2002).⁴⁹ The government is pushing further to strengthen the links between universities and businesses. Commissioned by the government, Richard Lambert sought views as to how the long-term links between business and British universities can be strengthened to benefit the UK economy. The independent review was announced by the Chancellor of the Exchequer in his Pre-Budget Report in November 2002.⁵⁰ The Government White Paper (DfES, 2003) announced that Lambert review would ask business for its views on the present governance, management and leadership arrangements of higher education institutions and their effectiveness in supporting good research and knowledge transfer and providing relevant skills for the economy.

However, fundamental issues remain. The House of Lords Science and Technology Fifth Report⁵¹ (2003) maintains that:

industry, to create a new form of academic enterprise. <http://www.cambridge-mit.org/cgi-bin/default.pl?SSSID=335> access date 16/07/03.

⁴⁹ In 1999/2000, UK universities identified a total of 199 spin-off firms. The University Companies Association (UNICO) data showed the UK spent £8.9 million on research for each spin-off compared with £24.7 million in Canada and £88.8 million in the US. The compilers cautioned against taking too much stock from these figures since not all spin-offs are created alike. Some attract more investment than others; some are ultimately more profitable than others (Davies, *THES*, 25 October, 2002). A longer-term perspective should be taken, following the stages of development of these firms in order to make reasonable sense of the statistics. See <http://www.unico.org.uk/prelease.htm> access date 26/10/03.

⁵⁰ The whole remit of the review is summarised as follows. The business-university collaboration review will:

- Identify the benefits to business of greater interaction with higher education, how this can be promoted and how any barriers holding back business demand for universities' knowledge and skills outputs can be addressed;
- Examine the national, regional and local economic impacts of business-university interactions, including how Regional Development Agencies and Sector Skills Councils can best support such interactions;
- Assess the lessons to be learned from business-university interaction across a range of countries and from best practice across the UK;
- Analyse how business employers can better communicate their skills requirements to a responsive university sector, and how they can improve the attractiveness of career paths to graduates and postgraduates, especially in technology; and
- Examine the effectiveness of measures such as the R&D tax credits on business demand for research and skills.

http://www.hm-treasury.gov.uk/consultations_and_legislation/lambert/consult_lambert_remit.cfm access date 03/09/03.

⁵¹ Reflecting a common and generally positive view from HE, business and RDAs, Professor Sir Gareth Roberts observed that (QQ 172, 175 & 176):

"the White Paper mentions the sum of £90m for this third stream of funding, which is less than ten per cent of money for research distributed via the RAE. This is still an inadequate counterweight, I suspect, to encourage people to focus principally on third stream funding. ... I personally think it ought to be at least

...lack of incentives makes it difficult for the HE sector as a whole to realise its potential in regional economic development. We therefore encourage HEFCE, DTI, and DfES to complete the establishment of the Third Leg as a core area of HEIs' work.

It has been pointed out by the Confederation of British Industry (CBI) that university research assessments are biased towards academic excellence and should reward business links.⁵² As already mentioned, in contrast to the traditional core areas of teaching and research, the third stream activities do not yet have sustained core funding nor national metrics to recognise quality provision.

The 2003 White Paper envisaged that, in the new and more diversified HE system, third stream activities would, for at least some institutions, become more important than basic research. However, it is important to note that work in knowledge transfer is carried out wherever it is found and not exclusively in the less/non research-intensive universities.⁵³ A following comment is made by a scholar:

It would be foolhardy to restrict in this way universities' options to work with business. This risks a fragmented higher education sector unable to respond to expectations for regional and national economic growth and development. Applied work depends on the link between research and knowledge transfer and would be put at risk by any artificial stratification of the system.⁵⁴

Following the January 2003 White Paper, in England, a joint document by HEFCE/OST proposing a second round of funding under the Higher Education

double the £90m to make people sit up and take notice ... It should be additional".
<http://www.parliament.the-stationery-office.co.uk/pa/ld200203/ldselect/ldsctech/140/14006.htm#n49>
access date 31/08/03.

⁵² In a response to what it calls a 'web of disconnected reviews' of university research and funding, the employers' organisation said proposals by the government and funding councils threaten the commercial exploitation of discoveries and inventions" *Financial Times*, 1 October 2003.

⁵³ Sir Alan Wilson, Vice-Chancellor of Leeds, said that knowledge transfer – the flow of new ideas and expertise from academia into the commercial world – was part of the core work of leading universities in the form of applied research, spin-outs and working with local people and businesses to promote lifelong learning (*Financial Times* 21 February, 2003).

⁵⁴ Notes based on comments during the seminar at Institute of Education, University of London, February 2003.

Innovation Fund (HEIF 2) is under consultation (until 24 October 2003).⁵⁵ The key questions here for each university are:

- To what extent are third stream activities going to be significant in relation to other activities, namely, research and teaching? What are the implications for the Region? ;
- What is the rationale for regional collaboration with other HEIs, the RDAs and regional industry?; and
- By what criteria are 'research led university' and 'less research led university' defined? What strategies are foreseen for departments which are 'less research led' within a 'research led' institution? (or 'research led departments' within a 'less research led' university?).

The future of the third stream activities needs to be considered in relation to the wider contexts of assessment and financing of the research/higher education system including the proposed reform of the RAE (see above p.117), the sustainability of the dual support system (see above p. 116-7) and, issues concerning the selectivity and concentration of research funding as indicated in the HE White Paper.⁵⁶ A recent study suggests that research concentration would have significant differences at a regional level with some regions losing important areas of research and suffering substantial reductions in performance, thus increasing existing regional disparities (see Universities UK, 2003:7). These issues are discussed in Chapter 5 and further examined in later chapters in Part III.

CONCLUSION

This chapter has discussed the two big transformations facing universities everywhere throughout the twentieth century namely the growing significance of scientific research and the emergence of mass higher education. Recently, governments throughout the

⁵⁵ Higher Education Innovation Fund –round 2 funding proposals
<http://www.hefce.ac.uk/pubs/hefce/2003/03%5F34.htm> access date 05/10/03.

⁵⁶ HEFCE pointed out that "the White Paper indicated that funding in research as a whole is likely to be further concentrated around world-class excellence and thus increase the regional disparity" (Select Committee on Science and Technology, 2003: 283). The White Paper says: "We ...intend to reward research that is more concentrated and better managed ..." (DfES, 2003, para 2.12). See Chapter 5, p. 154 for discussion.

world have been striving to establish reliable connections between wealth and higher education as the ‘knowledge enterprise’ (Buesta, 2000) in the globalising knowledge economy. Governments in many countries are trying to learn from success stories such as Silicon Valley and Cambridge. Many governments are offering incentives and encouraging academic institutions to go beyond performing the traditional functions of education and research, and to make a more direct contribution to wealth creation by forging links with industry.

Higher education’s purposes and mandates are getting even more multiple and are under constant pressure for change as its scale and clients change. Higher education is susceptible to influences and challenges from the outside world, particularly in terms of making its teaching and research activities relevant to the needs of the society and the economy. Growing attention has been given to the ‘third stream activities’ of universities. Each of the missions in higher education such as research, scholarship, teaching, and third-stream activities such as technology transfer, consultancy and community functions calls for different forms of knowledge and different forms of funding and institutional organisation, adding complexity and linkages.

This chapter particularly highlighted the recent changes occurring in UK higher education policies in relation to the institutional and geographical dimension of university activities. It is argued that higher education is increasingly expected to work at the interface between the needs of the global economy and the regional economy (e.g. Goddard and Chatterton, 1999). The following chapters investigate the regionality of universities by highlighting institutionalisation processes between universities and other regional partners illuminating the case in the English regions.

Chapter 5

The Geography of the UK Knowledge Economies: Devolution, Innovation and English Regional Development Agencies

INTRODUCTION

This chapter presents the institutional processes through which universities have been highlighted as the main agents in building the regional architecture of different forms of knowledge economies in the UK. The theoretical models that indicate the new role of universities in innovation systems (see Chapter 3 p.85-6) are closely linked to current shifts in the relationship between the private and public domains of knowledge production, which, in turn, are strongly conditioned by the structure of territorial governance systems. In this chapter, current policy discourses and institutional transformations are examined in the light of devolution, the regionalisation of the knowledge economy and the growing significance of higher education in this regionalisation of the knowledge economy.

The advent of the Government Offices for the Regions (GOs) followed by Regional Development Agencies (RDAs) has encouraged regional bodies to recognise the significance of working within the universities in their regions and to seek stronger links with those in their boundaries. The emergence of regional mechanisms of governance in English regions and of the regional competitiveness agenda through the advent of the RDAs has coincided with the reform of higher education as depicted in Chapter 4 (p.125-133). The new geographical groupings of universities reflect the emerging regional partnership arrangements in England (The Universities UK/HEFCE, 2001a: 24). Given these regional trends, McNay has suggested that there is a need for

universities to consider “a new arrangement for governance and democratic accountability” (McNay, 1994:335).

The dynamics of the wider process of political and administrative devolution taking place in English/UK regions seems to be influencing the geography and territoriality of higher education (see Chapter 3 p.85). Devolution, in this context, is seen as a process that requires multi-level partnerships and networking rather than a simple transfer of power from central to regional level (OECD 2001b: 11). This chapter starts by analysing the transformation of structural factors that comprise the organisational field of regional development. The establishment of RDAs in April 1999 created a new set of relationships in the English system of innovation support. The RDAs were given the fundamental aim of improving their regions’ economic performance and international competitiveness and, by doing so, collectively to raise the economic performance of the UK (Waters and Lawton Smith, 2002:633).

These key questions are asked:

- In what ways do ‘regional’ policies at different levels, namely, European, national, regional and sub-regional, interact and influence institutional processes at regional level? ;
- What kinds of joined-up mechanisms are being constructed to form innovation systems at a regional level which involve the HE sector? ;
and
- In what ways does the process of devolution affect the ‘regionalisation’ of the knowledge economy?

The first part of the chapter reviews current UK policy discourses concerning the advantages of the regional scale in policy intervention. Regional policy is concerned with both reducing regional disparities and promoting regional development. This has to be set against the historical background of UK regional policies including initiatives

targeted at the sub-regional scale. By so doing, the major agents in the current regional policy landscape are identified. The account indicates spatial structural factors behind the current higher education policies as discussed in Chapter 4.

The second part examines the influence of European regional policy, particularly the new forms of regional policy, namely regional innovation policy in the multi-level governance structure (MLG). In the European Union, an important transition is underway in the focus of the Structural Funds, the main instruments for promoting social and spatial cohesion in the EU directed at influencing the less favoured regions (LFRs). In particular, the focus is on the “new generation” (Morgan and Nauwelaers, 1999:xvi) of regional innovation policy in the shape of Regional Technology Plans (RTP), Regional Innovation Strategies (RIS) and Regional Innovation and Technology Transfer Strategies (RITTS) as they highlight the role which a wide array of organisations, including universities, can play in fostering innovation capacity.

The third part specifically looks at the role that universities play in the new mechanisms being created in order to *regionalise* the knowledge economy in the UK. Although the main focus of this study is on English regions, the experience of Scotland and Wales are also discussed here to illustrate the variety of processes of devolution whereby institutional strategic relationships are being built in order to regionalise the knowledge economy. Some recent initiatives and the new *strategic actions* and *contexts* (see Chapter 2, p.33) emerging in English regions are discussed in relation to the limits of national regional policies in light of the structure of existing regional disparities.

5-1 REGIONALISING THE UK KNOWLEDGE ECONOMY

The North-South Divide and the Regional Scale of Policy Intervention

For much of the post-war period, the regional problem was defined, as in the 1930s, in terms of the official “problem regions” themselves, the relatively depressed “assisted

areas” of South Wales, the North East, Central Scotland and Northern Ireland. Up to about the mid-1970s the gap between these areas and the rest of the UK remained fairly stable, and there was even some convergence in regional industrial structures (Martin and Townroe, 1992:17). Since the mid-1970s, the UK, along with other Western industrial countries, has been undergoing an evolving process of economic and social restructuring.¹ The restructuring process has been uneven geographically, and spatial disparities between and within regions have increased as a result. By the end of the 1970s it had become clear that traditional regional policy based on the employment-creation impact of regional policy in the assisted areas was failing to halt the widening disparities between the regions and areas.

The most obvious and most publicly debated disparity has been the opening up of a major “North-South divide”. The growth of a gap between the “southern regions” (the South East, East Anglia, South West and the East Midlands) and the rest of the country during the 1980s is described as “beyond question” (Martin and Townroe, 1992:18).² For example, the development of science parks in the UK since 1980s is inherently related to the issue of the “North-South divide” across the country (see Chapter 4, p.123).³

¹ Policies including high interest rates, privatisation, employment legislation, deregulation of finance markets, control of local authority spending, and the commercialisation of the remaining public services have changed how the economy works and substantially altered the economic landscape (Martin and Townroe, 1992:17).

² As regional inequalities have grown, producing a broad North-South divide in the process, intra-regional disparities have also increased. In every region, whether in the South or the North, local socio-economic inequalities have widened in recent years. Furthermore, the increased unevenness of economic development has occurred within the nation’s major cities (Martin and Townroe, 1992:18). The divide, however, dates back to the 1920s.

³ London, the South East and Eastern England alone already contain nearly half of all UK high-tech firms and half of its high-tech jobs. Innovation levels are much higher in the area running from East Anglia through to the south coast (Potts, 2002:988).

Table 5.1 shows the contribution each region makes to UK GDP. In 1999, GDPs for the South East and for London were around £120 billion, each accounting for about 16 percent of total UK GDP.

Table 5.1 Regional GDP

Region	Total £b n	Share of UK (%)	Per head	Per Head Index
United Kingdom	771.9	100.0	13,000	100.0
North East	25.9	3.4	10,000	77.3
North West	77.6	10.0	11,300	86.9
Yorkshire and the Humber	57.6	7.5	11,400	87.9
East Midlands	50.9	6.6	12,100	93.6
West Midlands	63.5	8.2	11,900	91.7
East	81.8	10.6	15,100	116.4
London	122.8	15.9	16,900	130.0
South East	122.0	15.8	15,100	116.4
South West	58.1	7.5	11,800	90.8
England	660.1	85.5	13,300	102.4
Wales	30.7	4.0	10,400	80.5
Scotland	64.0	8.3	12,500	96.5
Northern Ireland	17.0	2.2	10,100	77.5

(Source: Regional Accounts 1999, Office for National Statistics)⁴

The inherent limitation of traditional regional policy is found with its “preoccupation with manufacturing”, its “concern with regional industrial redistribution rather than development” and its “lack of strategic direction or selectivity” (Martin and Townroe, 1992:20). One of the fundamental changes has been the reconfiguration of state intervention that began under Labour in the mid-1970s, but was particularly pronounced under the Conservatives after 1979. These included the moves to make intervention more selective and cost-effective, to give much greater emphasis to the service sector, and to incorporate various small firm measures and advisory and consultancy assistance.

⁴ <http://www.statistics.gov.uk/cci/article.asp?id=124> access date 15/09/03. Most of the statistics are presented on the Government Office Regions (GORs) of England. See Appendix 5.1 for definitions of regions.

However, all these changes were made with the aim of further streamlining expenditure on regional assistance. The Conservative Government in the UK (1979-1997) seeing regional economic policy as interference with market forces, made sizeable cuts in support - 60 per cent in real terms between 1983 and 1995 (Potts, 2002:988). Economic development within the UK has become spatially more fragmented and differentiated (Cooke, 1989). At the same time, as central government regional policy has been restructured and slimmed down, so other locally-based alternatives have sprung up to fill the policy vacuum with a wave of local government initiatives and schemes with a distinct shift towards urban assistance (Martin and Townroe, 1992:20-1).

The post-1997 New Labour Government in the UK has been cautious in reversing this trend in regional policy expenditure. In terms of funding for regional policy in the UK, the European Union (EU) has now become the dominant force such that, by the mid-late 1990s, the UK Assisted Areas received about twice as much financial aid from the Structural Funds as from domestic regional policy. The amount of money, however, even if the two are combined, is only half the level reached in the early 1980s by the UK Government alone (as share of UK domestic product (GDP)) (Potts, 2002:988). Early 2000 saw the periodic return to the debate concerning the existence of a North-South prosperity divide in the UK and in the regions concerning the continued economic disparities between the regions.

...for the past three decades, a net average of 30,000 people a year (often younger and better skilled workers) have left northern England (north-east, north-west and Yorkshire –Humberside) for the south. ...between 1.4 and 1.75 million jobs ...are needed to put the old industrial heartlands (including Wales, Scotland and Northern Ireland) on a par with the prosperous south-east in terms of relative employment levels (Erdem and Glyn, 2001; Anyardike-Danes et al, 2001 cited from Potts, 2002:988).

Potts (2002) points out an inherent contradiction in the current regional development policy thinking in the New Labour Government. Despite the emphasis on region as an appropriate level of policy intervention, the current government thinking is in favour of “endogenous innovation-centred growth” which seems to be at odds with the argument for the increase in the level of Regional Selective Assistance (RSA). The proponents of the latter would argue that a considerable increase in the level of RSA to the level of the 1960s and 1970s would create hundreds of thousands of additional jobs in depressed areas at relatively low cost and would bring regional policy expenditure nearer to parity with that in France and Germany (Potts, 2002:988).

However, in terms of the ‘rhetoric’ of policy intervention and institutionalisation processes at a regional level, the approach taken by the New Labour Government is clearly characterised by ‘regionalising’ regional policy. In particular, the idea of clusters and competitiveness has influenced the policy thinking in terms of “regionalisation of policy” (Waters and Lawton Smith, 2002:634) in the development of national competitiveness.⁵ The ‘region’ has been increasingly seen as one of the most appropriate spatial units in which to promote competitiveness and innovation (DTI, 1998). In this line of thinking, RDAs have been formulated to provide English regions with an improved institutional capacity, thus countering their supposed “economic deficit” (DETR, 1997).

Devolution and the Emergence of Regionalism in England

Attempts were made to introduce regional planning structures into England in the 1960s and 1970s by Labour governments. However, these were weak bodies and remained very much creatures of central control, and did not survive the election of Thatcher’s

⁵ This is most apparent in the report published in 2001 by the DTI as *Business Clusters in the UK—a first assessment*. The report employs Porter’s 1998 definition of clusters as “geographic concentrations of

Conservative government in 1979. In 1994, the Major Government created Government Offices (GOs) in order to integrate the activities of central government in the regions.⁶ GOs work with regional partners and local people to help deliver the Government's central aims – “to achieve high and stable levels of growth and employment, and to build an inclusive and prosperous society that can develop in a sustainable way”.⁷ Another important remit of GOs, almost forced on the UK by the EU, is to manage European Structural Funds such as ERDF and ESF in the designated areas in their regions. Until recently, these arrangements didn't seem to be associated with a significant English regionalism as a political force.⁸ See Figure 5.1 below (p.161).

Since coming to office, New Labour's devolution and regionalisation programme has led to a fundamental reshaping of UK territorial politics, public policy and administration (Mawson, 2000:13).⁹ In general, devolution is understood as the transfer of powers from a central body to subordinate regional bodies. Devolved bodies

interconnected companies, specialised suppliers, service providers, firms in related industries and associated institutions in particular fields that compete but also co-operate”(Porter, 1998).

⁶ There are nine Government Offices, each headed by a Regional Director. They were established in April 1994, bringing together the former regional offices of the Department of the Environment, Transport and the Regions (DETR), the Department of Trade and Industry (DTI) and the Department for Education and Employment (DfEE). As well as personnel from the three original Sponsor Departments, each Government Office includes staff from the Home Office and the Department for Culture, Media and Sport. From April 2001, staff from the Department of the Environment, Food and Regional Affairs have also been based in Government Offices. Since May 2002, GOs and their corporate centre, the Regional Co-ordination Unit (RCU) have been part of the newly-formed department, Office of the Deputy Prime Minister (ODPM). The ODPM has taken on new responsibilities for housing, planning, regeneration and regional and local services from the Department for Transport, Local Government and the Regions (DTLR) which has been split up. See <http://www.rcu.gov.uk/GO/subject/gointro.htm> access date 15/09/03.

⁷ Following the Cabinet Office Performance and Innovation Unit report *Reaching Out: The Role of Central Government at Regional and Local Level* the government set up the Regional Co-ordination Unit (RCU) in April 2000. The RCU is an interdepartmental unit, located in the Deputy Prime Minister's Office within the Cabinet Office http://www.go-east.gov.uk/Government_Offices/ access date 15/09/03.

⁸ Proposals for the reform of English regional governance began to circulate within the Labour Party in the 1980s. Their 1992 Manifesto committed the party to elected regional government in England, alongside proposed reforms in Scotland, Wales, Northern Ireland and London. This stirred interest in regions such as the North East (Tomaney, 2002:2).

⁹ Prior to 1997, the Labour Party's consultation document, *A Choice for England*, published in June 1995, argued the case for making the Government Offices for the Regions (GOs), quangos and other agencies more open and accountable to the regions (Labour Party, 1995).

have been created such as a National Assembly in Wales and the Scottish Parliament.¹⁰ In New Labour's initial devolution programme the absence of England was noticeable. Much concern was expressed about the possibility of an 'English backlash' to Scottish and Welsh devolution, but the attitude of mass opinion in England has showed "benign indifference" (Tomaney, 2002:2).

Although the New Labour Government paid comparatively little direct attention to the needs of English regions, Regional Development Agencies (RDAs) were established to tackle regional inequalities as a result of John Prescott's support. The emergence and development of local authority joint working at the regional level were seen as one potential basis for developing a more accountable democratic regional structure (Mawson, 2000:15). There have recently been discussions in England regarding establishing elected regional assemblies.¹¹

English RDAs and the Innovation Agenda

In 1999, Regional Development Agencies (RDAs) were introduced into the English economic development policy and partnership landscape.¹² Seen as a way in which to improve regional competitiveness and innovation, their task is to build institutional capacity by creating a strategic context at a regional level and at a sub-regional level. Box 5.1 summarises the sequence of events from 1995 leading to the regionalisation of policies in England. Regional policy, strictly confined to England, is formally the

¹⁰ The UK Parliament at Westminster has devolved different powers to three bodies: the Scottish Parliament, The National Assembly for Wales and The Northern Ireland Assembly. The 1998 Scotland Act provided "for the establishment of a Scottish Parliament". Under the terms of the Act, the Scottish Parliament is able to pass laws affecting Scotland covering a range of issues. The Act also gives the Scottish Parliament the power to raise or lower the basic rate of income tax by up to 3 pence in the pound. Some of the issues devolved to the Scottish Parliament include education, health (including the NHS in Scotland), agriculture and justice. All the issues on which the Scottish Parliament can pass legislation are known as "devolved matters". <http://www.scottish.parliament.uk/visitor/faq.html> access date 15/08/03.

¹¹ A Bill setting out the powers and functions of elected regional assemblies will be introduced when Parliamentary time allows, once at least one region has voted 'yes' in a referendum. The Government has committed to do its best to publish this Bill in draft before the first referendums. http://www.odpm.gov.uk/pns/DisplayPN.cgi?pn_id=2003_0110 access date 15/08/03.

responsibility of the Department of Environment, Transport and the Regions (DETR, now the DTLR) and it has delegated a number of strategic functions to the new RDAs. RDAs became operational in April 1999 following the recommendations put forward in the 1997 White paper, *Building Partnerships for Economic Prosperity: Sustainable Growth, Competitiveness and Employment in the English Regions* (DETR, 1997). The eight RDAs are statutorily mandated to draw up strategies for the English regions outside London.¹³

Box 5.1. Development of Regionalisation Policies in English Regions

1995 *A Choice for England* Labour Party Consultation paper

1997 *Building Partnerships for Economic Prosperity: Sustainable Growth, Competitiveness, and Employment in the English Regions* (DETR)

1998 Regional Development Agencies-Draft Guidance on RDA strategies
The Regional Development Agencies Act

1999 RDAs set up in 8 English regions outside London

2000 RDA set up in London

2001 White Paper on Enterprise, Skills and Innovation *Opportunity for All in a World of Change* (DTI/DfEE)

Regional Economic Strategies drawn up by RDAs
Regional Science Councils in the North West and North East Regions

2002 White Paper on Regional Governance *Your Region-Your Choice: Revitalising the English Regions* (ODPM)

2003 Announcement on referendum for first elected regional assemblies in Northern English regions

The discourse of government very much centres on the knowledge economy, innovation and competitiveness. The Secretary of State for Trade and Industry, Stephen Byers, said at a conference in late 2000:¹⁴

Our regions need to be renewed. They were at the heart of our first industrial revolution and we must now ensure that they can play their part in the knowledge based economic revolution which is now taking place. In this modern economy, wealth creation and

¹² 'Regional Development Agencies' <http://www.consumer.gov.uk/rda/info/> access date 15/09/03.

¹³ Drawing up a regional strategy for London is the responsibility of the London Development Agency, which is responsible to the Greater London Authority, another devolved government, which formally came to existence on 4 July 2000.

¹⁴ Cited from <http://www.dti.gov.uk/ministers/archived/sainsbury090101.html> access date 14/08/03.

rising prosperity depend increasingly upon the application of knowledge. Location, raw materials and availability of capital used to be the main sources of competitive advantage. Now it is skills, knowledge and creativity which make the difference.

The U.K. White Paper on Enterprise, Skills and Innovation, *Opportunity for All in a World of Change* (DTI/DfEE, 2001) emphasises the importance of “building strong regions”, “investment for innovation”, “fostering enterprise growth”, and strengthening European and global connections.¹⁵ It has been pointed out that all eight RDAs’ 1999 strategies had one or more priorities related to the ‘knowledge economy and /or innovation’, and most have references to the ‘skill needs of the knowledge economy’ in skill strategies.¹⁶ RDAs were developed through amalgamation of existing institutions and programmes, rather than the substantial transfer of policy powers from the centre, namely, from the DETR (now DTLR), DTI, DfEE (now DfES) and other departments. The government emphasises the importance of RDAs as “facilitators” between various agents (Fuller, Bennett and Ramsden, 2002:421). See Figure 5.1 below (p.161).

Table 5.2 List of Regions and the English RDAs

Regions	RDAs	Abbreviation
North East	One NorthEast	ONE
Yorkshire and the Humber	Yorkshire Forward	
North West	Northwest Development Agency	NWDA
East Midlands	East Midlands Development Agency	EMDA
West Midlands	Advantage West Midlands	AWM
East	East of England Development Agency	EEDA
London	London Development Agency	LDA
South East	South East England Development Agency	SEEDA
South West	South West of England Regional Development Agency	SWRDA

¹⁵ Previously, a similar ethos was clearly articulated in other U.K. white papers, notably in the 1993 White Paper, *Realising our Potential*, and the 1998 White Paper, *Building the Knowledge-driven Economy*. See Chapter 4, p.125, Box 4.2. *Opportunity for All* White Paper says:

“We need a new approach to regional policy designed to build the capability of regions and communities. This must be based on encouraging enterprise, clusters and innovation. This is the basis of our sustained strategy to expand the winners’ circle. That is why the Government’s White Paper *Opportunity For All In A World Of Change* contains a set of policies designed to allow the different parts of the United Kingdom to build upon their own distinctive cultures, know-how and competitive advantages, and to achieve their full potential”. <http://www.dti.gov.uk/opportunityforall/pdf/nwest.pdf> access date 14/08/03.

¹⁶ Jim Lewis, presentation at Regional Studies Association Annual Conference (2001) “Regionalising the Knowledge Economy”.

In a real institutional context in the UK, however, there are tensions between RDAs and central government. English RDAs are limited in their scope and capacity for autonomous action in comparison to their equivalents for Scotland and Wales. Furthermore, the heterogeneous institutional environment in which they function gives RDAs different degrees of influence in different areas, although their main functions are to influence mainstream funding, disseminate strategic advice and promote partnerships (Fuller, Bennett and Ramsden, 2002: 421). Clashes of strategy occur where the various regional and local actors push their own priorities and agendas (Waters and Lawton Smith, 2002:635). Consequently, many issues arise from the need for RDAs to develop strong relations with other institutions. Furthermore, it is argued that RDAs have the effects of “disrupting existing institutional linkages” (Deas and Ward, 2000:282) through a failure to appreciate the “multiscalar dimension of economic policy” (Waters and Lawton Smith, 2002:635).

At the same time as RDAs have been established, new institutions have been created by other government departments which have set up alternative foci at the sub-regional level. The Local Learning and Skills Councils (LSCs) were set up by the DfEE(DfES) and the Small Business Service (SBS) was created by DTI. The limited resources of the RDAs and their lack of control over these new bodies have restricted the actions that RDAs can pursue (Fuller, Bennett, and Ramsden, 2002:422). It is even argued that RDAs will duplicate services provided at the local level giving rise to “multi-agency competition” (Roberts and Lloyd, 2000:76).

In England, there is as yet no regional elected government in the sense of providing political accountability.¹⁷ Financially, there will be more funding circulated

¹⁷ On 16 June 2003, the northern regions (North East, North West and Yorkshire and the Humber) have been selected following careful consideration of responses to the Government's soundings exercise which

through RDAs following the introduction of ‘Single Pot’ funding in 2002.¹⁸ The RDAs were given far greater freedom to consult and work with their regional partners to determine how the funding would be deployed to address regional priorities in ways which best suit each region. However, in the light of the devolution of governance structure, the present concern is not about devolution in terms of setting up separate funding mechanisms at a regional level but is, rather, at least for now, about strengthening the regional machinery and the capability and ability of regional players. In the light of this, devolution needs to be seen as “a process that requires multi-level partnership and networking” (OECD 2001b: 11) rather than as a simple transfer of power from central to regional level.

Regions, Universities, Clusters and Competitiveness

The UK regional policies since the late 1990s have been characterised by devolution of government and regionalisation of the knowledge economy on an ‘endogenous innovation centred growth model’ whereby universities are expected to play a vital role.

Post-1997 New Labour Government industrial policy is based on the model of cluster development. Clusters¹⁹ were initially identified as an important area of economic development in the December 1998 Competitiveness White Paper.²⁰ The

aimed to test the level of interest in holding a referendum in all eight English regions. These three regions will now be subject to a local government review conducted by the Boundary Committee - a necessary pre-cursor to referendums on elected regional assemblies. The Government also reconfirmed its commitment to strengthen all regions whether an elected regional assembly is established or not. The Regional Assemblies (Preparations) Act, paving the way for referendums on elected regional assemblies, received Royal Assent in May 2003. http://www.odpm.gov.uk/pns/DisplayPN.cgi?pn_id=2003_0110 access date 15/08/03.

¹⁸ HM Treasury (2002) Spending review, 15 July 2002 ‘New Resources and New Responsibilities for RDAs’ http://www.hm-treasury.gov.uk/spending_review/spend_sr02/press/spend_sr02_pressregional.cfm access date 13/02/03.

¹⁹ DTI defines clusters as “concentrations of competing, collaborating and interdependent companies and institutions which are connected by a system of market and non-market links”. <http://www.dti.gov.uk/clusters/> access date 05/04/03; Porter’s definition was given above p.139.

²⁰ The White paper says: “... there may be a role for government in brokering greater collaboration between firms or between firms and universities. By its nature, much of this will need to be done at the regional or local level. In addition, the Government is reviewing how the planning system can best help

1998 Competitiveness White Paper *Building the Knowledge-driven Economy* (DTI) stipulated the importance of science and technology in an increasingly competitive world. At the end of 1999, Lord Sainsbury was asked to set up a high-level Clusters Policy Steering Group to identify barriers to cluster development and recommend appropriate new policy initiatives to Cabinet. This Group was supported by a Whitehall-wide group of officials. Both groups were wound up in January 2003 as their work had been completed. The work of both groups was informed by a map of existing cluster activity in *The Business Clusters in the UK: A First Assessment*, published in February 2001.²¹ The research represents the first UK-wide systematic study of existing clusters.

Most RDAs are involved in development of clusters of some sort although the precise meaning of cluster in each region is not always clear. However, it has been argued that localities and regions are dis-empowered because central government determines which clusters are important and refuses to delegate powers to the regions for science and technology policy (Charles and Benneworth, 2001:74). Waters and Lawton Smith (2002:635-6) argue that the content of the RDAs' Regional Economic Strategies (RES) published in 2000 in general seems to be at odds with the resources that they were given.²² In 2000, £50 million was announced in the 2000 DTI White

promote the needs of clusters (5.26)". http://www.dti.gov.uk/comp/competitive/an_ch5.htm access date 05/04/03.

The nature of clusters varies considerably from the old to the new economy and in terms of scale and distribution, and the levels of public intervention. For example, the Cambridge's ICT and biotechnology sectors operate as a cluster. With regard to biotechnology, it has the greatest non-US concentration of biotechnology drug development firms that will lead the industry in future. Because of the sunk costs associated with co-location by venture capitalists, specialist patenting, legal, accountancy and insurance services, the immobility of the university as a key-knowledge-driving resource, and the presence of a critical mass of biotechnology firms and entrepreneurs, Cambridgeshire is likely to remain the focus (Cooke, 2002:147). These are examples of so-called 'New economy' clusters.

²¹ *Business Clusters in the UK - A First Assessment*, published in February 2001. Its purpose is to provide a snapshot of existing clusters across the UK to inform the thinking of Lord Sainsbury's Clusters Policy Steering Group and the development of clusters policy. It will be used by the RDAs as a base source of information for their clusters development work. <http://www.dti.gov.uk/clusters/map/> access date 18/08/03.

²² Some RDAs (e.g. SEEDA and EEDA) posit raising the international competitiveness of the regions as the principal aim. However, in 1999-2000, compared to the budget for local area regeneration

Paper to create new Regional Innovation Funds to enable RDAs to support clusters and incubators and new clubs of scientists, entrepreneurs and managers.²³

In the new UK Competitiveness report published in May 2003,²⁴ Porter and Ketels argue that regions will become more important and that the role of universities as well as private sector players will be significant within clusters.

New roles for the existing players as well as a new set of institutions are necessary in economic policy. At the center will have to be a shift in the role of government; government-led development must be transformed into private sector-led development. New and more effective institutions for collaboration will be needed to enable a stronger private collective action, and to strengthen the development and the interaction within clusters. Universities and public research institutions need new structures to strengthen their roles as active parts of the regional business environment of which they are part (Porter and Ketels, 2003:50).

Universities' involvement is seen as "a key element of clusters". The following paragraphs review the development of the UK cluster policy in relation to wider economic development, through which the emergence of the joined-up thinking between industry and universities, increasingly at the regional level, is revealed.

The importance of universities in clusters has been most overtly acknowledged by national policy-makers through the DTI Cluster Officers Working Level Group (Potts, 2002:999). The clusters map was published in tandem with the joint DTI and DfEE White Paper (2001), *Opportunity for All in A World of Change*; a follow up to the 1998 White Paper. This recognises the key role clusters development can have in the

(£671million), the budget for regional competitiveness and inward investment was very limited (£12.1 million) (Waters and Lawton Smith, 2002:635-6).

²³ In terms of RDA funding this is most likely to affect higher education. The Chancellor announced the Innovative Clusters Fund of £50 million in the 2000 Budget. This allows RDAs to co-finance business incubation and small-scale infrastructure, and a sum of £15 million was allocated to RDAs for 2000-1 and universities have been involved in this.

²⁴ DTI Economics Paper 3, "UK Competitiveness: moving to the next stage". May 2003. The report was commissioned by the UK Department of Trade and Industry (DTI), and sponsored by ESRC (Economic and Social Research Council). <http://www.dti.gov.uk/economics/paper3-porter-ketels.pdf> access date 15 June 2003.

regional economy, and encourages RDAs to develop existing and embryonic clusters in their region, building on their natural regional capabilities.

In September 2001, Lord Sainsbury addressing RDAs said:

A key issue which you need to look at is how good are the links between your universities and these clusters. Are administrative processes good? Is cooperation between universities effective? Is knowledge transfer user friendly? Timescales? This is not only about research links but also the provision of skilled undergraduate courses....all important for clusters...(and) keep graduates in the region.²⁵

Thus the UK national government addresses the issues of national competitiveness in the knowledge economy by forging stronger links between universities and industry and, at the same time, the government tries to create opportunities for communities and regions, hit by restructuring in traditional industries, to position the localities to succeed in emerging and fast growing sectors of the future. Universities have become to be seen as “central to local and regional economic development”.²⁶

National Competitiveness or Regionalisation of Science Policy?

Questions have been raised about the ‘regional’ dimension of national science policy. As the above section showed, regions are increasingly seen as key to the implementation of the national science policy which deals with exploitation of research for wealth creation. This attempt, however, has to be set against the scientific capacity of each region, particularly in light of the amount of research funds which is unevenly distributed between the North and South of the country.

In terms of government R&D funding, in 2000, London and the South East receive 49 per cent of direct government funding. 47 per cent of R&D funding through

²⁵North West Knowledge Economy Conference, University of Central Lancashire, Preston January 09, 2001 <http://www.dti.gov.uk/ministers/archived/sainsbury090101.html> access date 15/08/03.

²⁶ “They produce people with knowledge and skills. They generate new knowledge and import it from diverse sources. And they apply knowledge in a range of different environments. They are the seed-bed for new industries, products, and services, and they are at the hub of the business networks and industrial

higher education goes to London and the South East (Perry 2003:3). This reflects the distribution of R&D facilities and opportunities to maximise outcome. But, from a regional economic development perspective, there is a clear problem with the system of scientific governance. Charles and Benneworth (2001:77) argue that the continuing disparities in scientific funding, which are an important element of regional disparities in the UK, are direct consequences of the system of scientific governance which at present cannot incorporate and consider regional development arguments and interest representations.²⁷

Table 5.3(a, b and c) shows the breakdown of business R&D, government R&D and HE R&D from 1998 to 2000.²⁸

clusters of the knowledge economy". <http://www.dti.gov.uk/ministers/archived/sainsbury090101.html> access date 15/08/03.

²⁷ The case of the location of the new Diamond synchrotron facility in the South East Region in 2000 despite the efforts of the North West illustrates the weakness of the current institutional arrangement for the simultaneous delivery of science and regional development policies (see Charles and Benneworth, 2001:75-6; Perry, 2003:1-2; see also below p. 176).

²⁸ There are inadequate statistics available on R&D and science in the regions in England, which is noted in *Science and Technology Fifth Report* by the House of Lords Select Committee appointed to consider Science and Technology (July 2003). In the section entitled 'Science and the RDAs: SETting the regional agenda' it says: "We recommend that the Government should urgently publish the latest possible information about its R&D spend per region, and keep this up to date as a measure of its performance in supporting regional economies through nationally-provided SET" (Paragraph 5.10). <http://www.parliament.the-stationery-office.co.uk/pa/ld200203/ldselect/ldscitech/140/14002.htm#a7> access date 11/10/03.

Table 5.3 a Regional Breakdown of R&D performed within UK Businesses (£m)

	1998		1999		2000	
		%		%		%
England	9,601	100.00	10,607	100.00	10,827	100.00
North East	178	1.83	164	1.55	164	1.51
North West	1,224	12.75	1,476	13.92	1,451	13.40
Yorkshire and the Humber	287	2.99	309	2.91	304	2.81
East Midlands	775	8.07	838	7.90	933	8.62
West Midlands	708	7.37	724	6.85	576	5.32
East	2,367	24.65	2,559	24.13	2,758	25.47
London	614	6.40	735	6.93	810	7.48
South East	2,542	26.48	2,916	27.49	2,964	27.38
South West	907	9.45	887	8.36	867	8.01

b Regional breakdown of R&D performed within UK Government establishments (£m)

	1998		1999		2000	
		%		%		%
England	1,809	100.00	1,529	100.00	1,816	100.00
North East	3	0.17	2	0.13	2	0.11
North West	58	3.21	48	3.14	57	3.14
Yorkshire and the Humber	31	1.71	40	2.62	48	2.64
East Midlands	51	2.82	48	3.14	56	3.08
West Midlands	182	10.06	164	10.73	194	10.68
East	255	14.10	213	13.93	259	14.26
London	202	11.17	198	12.95	258	14.21
South East	698	38.58	557	36.43	635	34.97
South West	329	18.19	259	16.94	307	16.91

c Regional breakdown of R&D performed within UK HEIs (£m)

	1998		1999		2000	
		%		%		%
England	2,494	100.00	2,737	100.00	2,984	100.00
North East	105	4.21	113	4.13	122	4.09
North West	238	9.54	260	9.50	287	9.62
Yorkshire and the Humber	241	9.66	270	9.86	284	9.52
East Midlands	159	6.38	182	6.65	204	6.84
West Midlands	167	6.70	180	6.58	192	6.43
East	211	8.46	255	9.32	324	10.86
London	775	31.07	837	30.58	895	29.99
South East	460	18.44	493	18.01	515	17.26
South West	138	5.52	148	5.41	160	5.36

(Source: Office for National Statistics; Compiled by Perry, 2003)²⁹²⁹ http://www.statistics.gov.uk/downloads/theme_commerce/MA14_2001.pdf access date 11/10/03.

There is evidently a tension between a science policy oriented around national science priorities and the competitiveness agenda and the regional policies aimed at decreasing regional disparities and furthering economic development in the English regions (Charles and Benneworth, 2001). As discussed in Chapter 4 (p.134) the government proposals to shift research funding to a fewer number of departments are likely to lead to a major distribution of research activity and to bring about highly differential effects not just on institutional research profiles but on regional research capacity and diversity (Universities UK, 2003:7).³⁰ Ivor Crewe, President of Universities UK, said that further concentration of research would be a “national folly”.

We are concerned that the concentration of research will stunt development of promising research teams and young researchers and damage regional economies outside London and the Southeast.³¹

On the other hand, Science Minister Lord Sainsbury denied claims that Northern regions were losing out on research funding to “golden triangle” universities in the South East. He conceded that there was “some tension” between the North and the South but insisted the claims had been overstated. In *Financial Times* 18 July 2003, it is reported, whilst Lord Sainsbury was trying to promote science activity regionally, Professor John Goddard, Deputy Vice-Chancellor of Newcastle University said that, DfES had not signed up to the government agenda of tackling regional disparities:

“Each university is taking a series of isolated decisions to try to balance the books”. This was forcing cuts which affected universities’ ability to support manufacturing – a cornerstone of the government’s approach to helping underperforming regions create a knowledge-based economy. “There’s no doubt there’s research of national and

³⁰ A study commissioned by Universities UK (published in October 2003) concludes that due to the initial disparity of research capacity and profile, the impact of the policy that increases grade 4 and 5 differentials will be unevenly spread across the UK and is likely to increase existing regional differences. Wales and the East Midlands appear to suffer the greatest losses whilst the three regions (South East, London and East) appear likely to gain most (Universities UK, 2003:28).

³¹ ‘Crewe calls on Minister to trust, listen to and invest in UK’s universities’ 10 September 2003 <http://www.universitiesuk.ac.uk/mediareleases/show.asp?MR=358> access date 11/09/03.

international excellence which is being undermined by the funding formula” (Tighe, 2003).³²

These statements bring in the issue of the ‘regionality’ of university activities, which is discussed below (p. 167), particularly focusing on the impact of third stream initiatives (see Chapter 4, p.128 Box 4.3). The thesis now turns to look at another spatial layer of policy influences. It is not only the UK central government that decides and influences regional policies. There is another important layer of regional policy which influences the structure and agencies of English regions, that is, the European Union (EU).

5-2 REGIONS, INNOVATION AND COMPETITIVENESS IN EUROPE

European Regional Policy and Multi-Level Governance

In the EU, European regional policy aims at alleviating the regional socio-economic disparities through *innovation* and *learning*. In the policy context of the European Union,³³ what began to change at the end of the last century is said to be the “maps of policy formulation and delivery” (Lawton Smith, 2002:2). First, in terms of policy formulation, “cohesion, competitiveness and research and technology policy” were brought together as common objectives (Charles, 2002: 122). See Table 5.4.

³² On a visit to Teeside University, the minister said he acknowledged the fear of universities in underperforming regions that they would lose out to London, Oxford and Cambridge in the government’s new research funding regime. But he said this worry had been overplayed – partly because a degree of concentration in science research activity was “almost inevitable” anyway, as this was the nature of modern research. In his speech, Lord Sainsbury warned that narrowing the economic performance gap between regions was a “very tough challenge”. Tighe, C. (2003) ‘Science minister plays down claims of regional bias in funding’ *Financial Times*, July 18 2003.

³³ After successfully growing from 6 to 15 members, the European Union is now preparing for its biggest enlargement ever in terms of scope and diversity. 13 countries have applied to become new members: 10 of these countries - Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic, and Slovenia are set to join on 1st May 2004. They are currently known by the term “acceding countries”. Bulgaria and Romania hope to do so by 2007, while Turkey is not currently negotiating its membership. <http://europa.eu.int/comm/enlargement/enlargement.htm> access date 02/09/03.

Table 5.4 Competitiveness, Innovation and Knowledge agenda in the EU and UK

The European Commission	The UK Government White Paper
•1994 White paper on <i>Growth, Competitiveness and Employment</i>	•1993 <i>Realising Our Potential</i>
•1995 Green Paper on <i>Innovation</i>	•1998 <i>Building the Knowledge-driven economy</i>
•2000 European Research Area (ERA)	•2000 <i>Excellence and Opportunity</i>
•2000 <i>Innovation in a knowledge-driven economy</i>	•2001 <i>Opportunity for All in the World of Change</i>
•2001 <i>The Regional Dimension of ERA</i>	
•2003 Green Paper on <i>Entrepreneurship</i>	

Second, the scale of delivery is now at the regional rather than the national scale. Concern about global European competitiveness has combined with worries that widening regional economic differences are producing an international ‘cohesion gap’. This gap is being extended by the even bigger ‘technology gap’ between the technologically well-endowed regions and non-core regions in the EU (Landabaso, 1997:3-7). New institutions and networks are being created to deliver these policies. Some of the above mentioned concepts have been incorporated into policy formulation as well as delivery.

In the European context, the local, regional, national and supranational policy levels are strongly interdependent and interwoven. One of the priorities for the new generation of regional development programmes in the European Union is the promotion of *innovation* whereby the key challenges for policy involve assisting firms and localities to change by enhancing their *learning* capabilities. In the policy environment of the European Union, the prime objective seems to have remained the agenda of the “competitiveness of Europe versus the rest of the world” (Lawton Smith, 2002:2). This is because, in numerous analyses of the EU’s weakness vis-à-vis its competitors, namely the US and Japan, innovation has been highlighted as “a crucial deficit in both business competitiveness and the quest for wider prosperity, cohesion and integration within the Union” (CEC, 1995 cited in Cooke, 2002:60). EU policy makers have adopted some elements of the ‘innovation systems’ approach (see Chapter

3 p. 75), which is evident in the broader view of innovation policy expressed in the 1995 Green Paper on Innovation (Edquist, 2001:225).

The European Union has taken an important role in regional policy throughout the EU. In the context of European regional policies, policy instruments seem to encourage activating “interactive learning, reflexive knowledge networks, innovation and social capital” (MacLeod, 2000) mainly targeting “less favoured regions” (LFRs). Thus, three levels of government in the European Union, namely, sub-national, national and supra-national, try to address disparities and promote development through a variety of policies, programmes and instruments in the wider framework of ‘Europe of the Regions’.

The Rhetoric of ‘Regional’ Innovation Policy at European Level

In the European Union, the regional level has been seen as appropriate because regional imbalance is such a pronounced feature of the EU “space-economy” (Cooke, 2002:60). Through the European Regional Development Fund (ERDF), which since 1975, and more significantly since 1988, has provided regional subsidies throughout the EU, the supranational unit approves nationally designated regions for assistance.³⁴ The Single European Act obliges the EU to reduce the differences between regions in an effort to realise the objective of social cohesion. EU research and technology development (RTD) funds are also directed to some extent towards “less favoured regions”.

There is thus a clear need to formulate integrated RTD (Research and Technology Development) and innovation strategies which connect to the economic development process in the regions and which, via the national system of RTD and innovation

³⁴ Several development objectives were given priority for 1994-99: regions lagging behind in development (Objective 1); areas in industrial decline (Objective 2); the fight against long-term unemployment, youth unemployment, and exclusion from the labour market (Objective 3); preventive adaptation of the workforce to industrial and production system changes (Objective 4); adjustment of agricultural structures and modernisation of the fishing industry (Objective 5a); vulnerable rural zones (Objective 5b); and regions with very low population (Objective 6). These Objectives, set up by the EU, are interpreted by the national government often in contention with particular regions or sub-regions.

support, is integrated into a wider European perspective (European Commission, 1999:144).

In the European Union, various innovation networking programmes at regional level have grown, and more regional authorities seem to have greater competence and confidence to implement the relevant learning processes at regional level (Cooke, 2002:11). The European Commission has since 1994 been increasingly building a regional dimension into its support for innovation systems through several programmes. One is from the Innovation Directorate DG 13, in the form of the Regional Innovation and Technology Transfer Strategies (RITTS) Programme. The other is through joint action between DG 13 and the Regional Policy Directorate DG 16 under the Regional Innovation Strategies (RIS) programme.³⁵ There are currently more than 100 regions in the EU that have participated in the RIS/RITTS programmes (Potter et al., 2002:285).

The emergence of RIS signified the first step towards building ‘soft’ or intangible, network-form, infrastructures in less favoured regions to complement more typical past investments in transport and energy infrastructures (Cooke, 2002:60). The main objective of innovative actions under the ERDF is to “influence and improve European regional policy in order to make it more efficient in terms of its content and policy action” (Landabaso, et al., 1999:10). These innovative actions rely on “the principle of helping regions to help themselves through initiatives to mobilise local knowledge in a process of collective social learning” (Lanbasado et al., 1999:10).³⁶

³⁵ In the UK, three RISs were published in 1998 and 1999, for Strathclyde in Scotland and Yorkshire and Humberside, and the West Midlands in England (see Thomas, 2000). The RISs support the UK Competitiveness White Paper from the DTI, which is subtitled as *Building the Knowledge-driven Economy* (DTI, 1998). See above Table 5.3. p.153.

³⁶ The European Commission is also encouraging regional partnerships which involve universities as key delivery agents, for example, through the European Regional Development Fund (ERDF). The European Commission has encouraged regional partnerships through ERDF to include elements in their programmes for technology transfer, new technology-based firms, and technical advice to small and medium enterprises (SMEs) whether on innovation, IT or sustainability (Charles, 2003:13).

Regional policy makers are encouraged to make both intra- and inter-regional *learning* actions supported by these programmes. At the regional level, these programmes are described as “*bottom-up* (demand-driven, dialogue with SMEs), *regional* (built on a consensus at regional level), *strategic* (plan based on socio-economic objectives), *integrated* (both public and private sectors are involved) and *international* (international co-operation)” (Hassink, 2001:225 original emphasis). These policy instruments resonate with the idea of building up collective learning capacities at a regional level which Lagendijk and Rutten name as a “regional-associative approach”. In this line of thinking, a region can be perceived as a suitable “laboratory for innovation”(2003:208) whilst a region can also be seen as a prime space for wealth distribution and cohesion.

These programmes, as part of the new generation of EU regional policies (see Landabaso et al., 1999) aim at improving the institutional capacity for innovation of LFRs, and arguably, this, in turn, should lead to higher absorption capacity by these regions for innovation funds from the EU and national governments. Landabaso (2000), however, points to the paradoxical situation that, whilst peripheral regions should spend more on innovation, they have less capacity to absorb available funding for innovation:

Such is the regional innovation paradox. Today, in Europe, advanced regions spend more public money (and in a more strategic way) for the promotion of innovation for their firms than less favoured regions do, thus increasing the innovation gap across Europe (2000:8).

European policies are promoting regional innovation systems through political instruments encouraging innovation, learning, technology transfer, sharing best practices, and multinational networking.³⁷ The key question is, then, to find out the

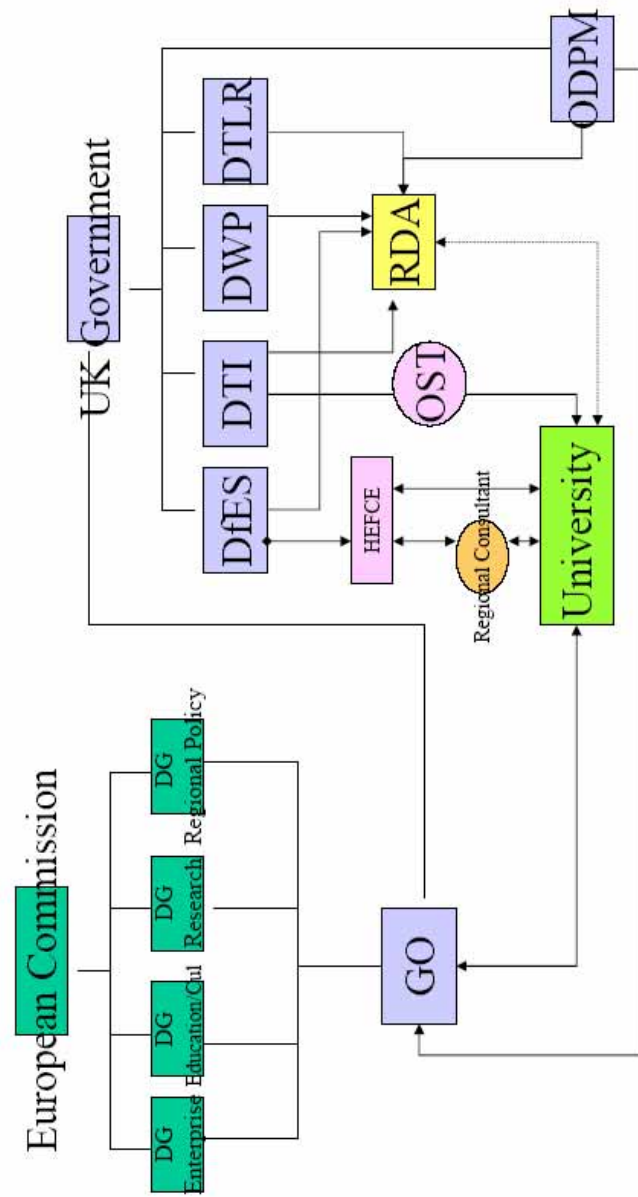
³⁷ Recent years have seen the Joint Secretariat creating the Multi-Regional Technology Transfer Projects (RTT) that are aimed at encouraging the development of international transfer networks between firms in

obstacles LFRs face in furthering innovation processes and, as a particular interest of this thesis, to identify the obstacles to universities playing a part in that process.

As has been pointed out in Chapter 3 (p.74-5), there are issues involved in national frameworks and multi-level governance structures. Consideration of the issues that LFRs face is not only a regional problem; all sub-regional, regional, national, European and international institutional dimensions are interrelated. The following section focuses on the role played by universities as the main institutional players in the organizational field where multiple geographical scales are interrelated. To give an overview in a diagrammatic way, Figure 5.1 below illustrates line of influence on an individual university in the European, UK national and regional MLG structure.

EU core regions and ones in LFRs of the Union. With average EU funding of £47,000, the RTTs are less significant than RIS and RITTS, but universities are actively involved (Potts, 2002:993).

Figure 5.1. Line of Influence in European, UK national and regional MLG structure and individual university

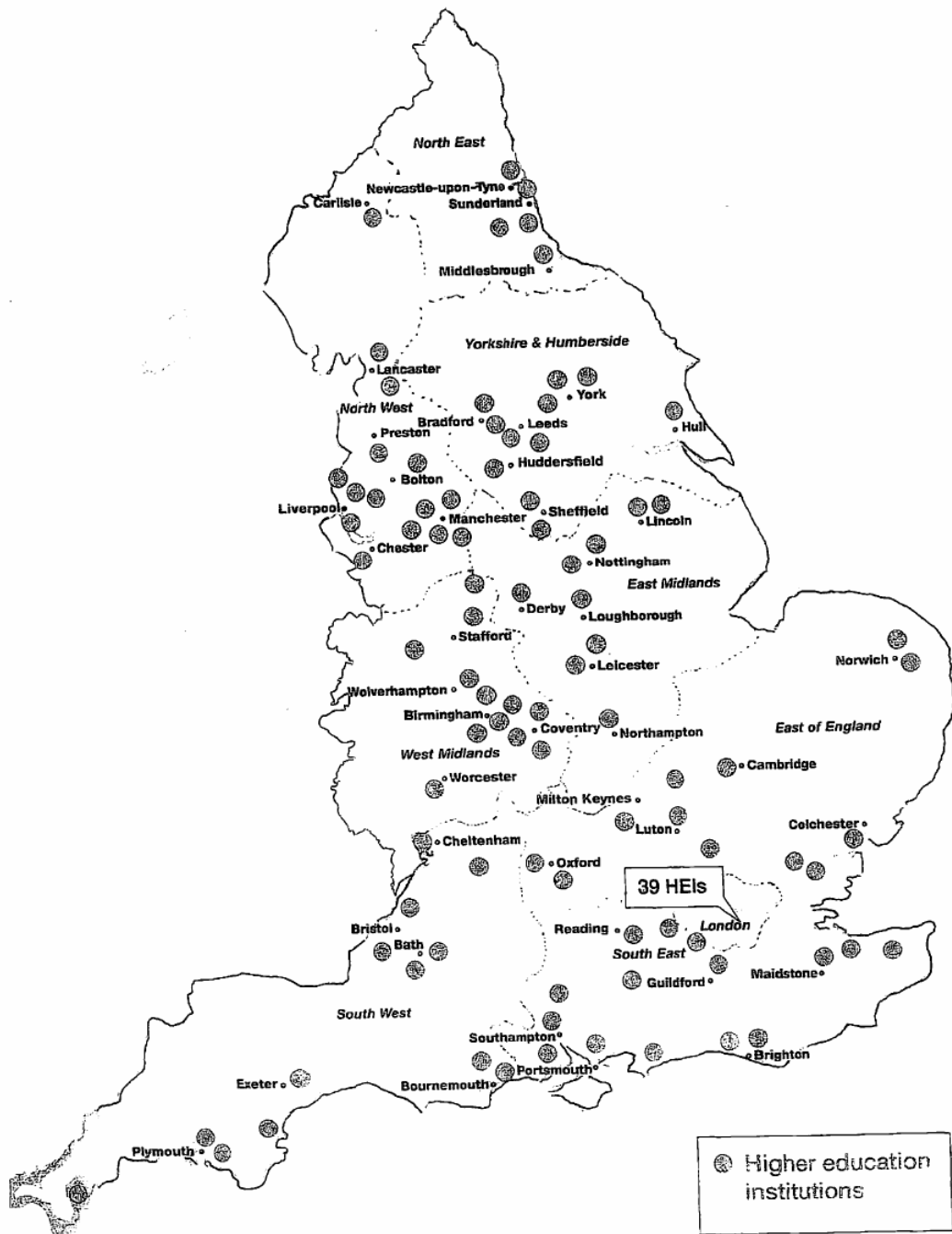


Map 5.1 English RDAs with their logos



(from Bentley, B. and Gibney, J. (eds.) 2000)

Map 5.2 HEIs in English regions



(from HEFCE 2002a) 163

5-3 UNIVERSITIES AND REGIONAL INNOVATION SYSTEMS: CONSTRUCTING THE UK REGIONAL ARCHITECTURE OF KNOWLEDGE ECONOMIES

‘Regionalising’ UK Higher Education Policy

This section highlights the interrelationships between *national* higher education policy, the devolution of *national* regional development policy, and *European* regional innovation policies, and examines the way policies (structure) have influenced institutions (agents). Since the election of the Labour Government in 1997, policy discourses have been concerned with universities’ contributions to regional development while remaining committed to the previous Conservative government’s agenda of commercialisation of research both through increasing links with industry and through academic entrepreneurship (Lawton Smith, 2003:2).

As already mentioned, the devolution of UK government has been accompanied by some *regionalisation* of economic development policies and science policies. The rescaling of regional economic development mentioned in the first section of the chapter has led to a limited rescaling of science policy from national to regional, posing new challenges for universities. As already mentioned, English RDAs were set up in 1999 and 2000 to regenerate the regions and to improve their infrastructures. The Welsh and Scottish regional agencies, with longer histories and experience, seem to have established stronger links with their universities than the English regions.

Scotland is known for its fuller devolution, stronger research capacity of universities and more focused innovative policy (see Cooke, 2003b).³⁸ In Scotland, the

³⁸ Cooke (2003b: 18-9) discusses Life Sciences in Scotland as a “knowledge economy exemplar”. Scotland produces 20 per cent of UK biotechnology graduates, 28 per cent of those in medicine and 18 per cent of biosciences. “Life Sciences could be a jewel in the crown of a ‘Smart, Successful Scotland’ if existing policy is broadened from the narrower biotechnology support policy, present strengths in human capital are better marketed but also augmented, and the cluster strategy re-invigorated for a broader life sciences and, particularly, pharmaceuticals research constituency. The whole could usefully be underlined by a state of the art international knowledge flow network management system based on open access to a service designed in partnership with industry and academia”.

SHEFC created a Knowledge Transfer Grants scheme to help universities invest in infrastructure for knowledge transfer activities. Intermediary Technology Institutes were set up in 2003 to create a strong relationship between the universities and Scottish Enterprise, the development agency.³⁹ Wales has weaker devolution and research capacity is said to be weaker than that in Scotland. Welsh Development Agency operates a Knowledge Exploitation Fund (see Chapter 4, p.117-8).⁴⁰

In both cases, however, there are inadequate linkages and mutual understanding between universities, government and businesses, and there are insufficient incentives for universities to focus research capacity on regional needs.⁴¹ In England, with a few exceptions such as the North East Region, only in the recent years have RDAs begun to look at universities as partners. In its Regional Economic Strategy, One NorthEast(ONE) states that one of its objectives is to “place universities and colleges at the heart of the region’s economy” and it devotes one specific section to the role of the universities in the Region (ONE, 1999).⁴²

³⁹ Scottish Enterprise set up the Intermediary Technology Institutes (ITIs) which aim at promoting research commercialisation with global networks and links. See <http://www.scottish-enterprise.com/iti> access date 16/08/03. Other initiatives include the Proof of Concept Fund, the Scottish Enterprise/Royal Society of Edinburgh Enterprise Fellowships, the Edinburgh-Stanford Link and the Kelvin Institute.

⁴⁰ Welsh Development Agency (WDA) supports Technium, an incubator similar to the ITIs, which promotes boosting innovation and entrepreneurship. http://www.wda.co.uk/en/technology_and_innovation/technium.cfm access date 16/08/03.

⁴¹ Charlie Jeffery, “Universities, Regional Science Policy and Devolution in the UK”, *Towards a Multi-Level Science Policy: Regional Science Policy in a European Context*, RSA and ESRC, London, 8-9 May 2003.

⁴² The concept of the learning region (see Appendix 3) is employed in relation to the role of universities enhancing the knowledge economy in the region. In their Regional Economic Strategy, *Unlocking Our Potential* (1999), one of the strategies is “Exploiting the Research & Technology Base”. This includes helping regional companies to innovate through technology transfer within and between universities and companies regionally, nationally and internationally; incubating new SMEs through entrepreneurship creating spin-off companies; and increasing private sector R&D by maximizing investment and attracting science and technology investment to the region and by the use of existing facilities, regionally and nationally.

European Commission regional economic policies have increasingly sought to engage universities as part of the Commission's growing concern with regional innovation disparities. The role of universities in knowledge transfer has been raised by the European Commission in a recent consultation paper.⁴³

Co-operation between universities and industry needs to be intensified at national and regional level, as well as geared more effectively towards innovation, the startup of new companies and, more generally, the transfer and dissemination of knowledge. From a competitiveness perspective it is vital that knowledge flows from universities into business and society (CEC, 2003:7).

The regional and local role of universities in the EU is emphasised with its international dimension:

The regional dimension of the university activity is thus set to get stronger, given its essential role in achieving the Europe of knowledge, particularly looking ahead to enlargement (CEC, 2003:22).

The European Union supports these developments, particularly through the Structural Funds and the Sixth Framework Programme.

At a national level, in the UK, the contribution that universities can make to regional development was also recognized by the Dearing Report in 1997 (NCIHE, 1997; see Chapter 4, p.119).⁴⁴ According to a survey carried out for the Department for Education and Employment (DfEE) in the U.K. in 1997, over 61 per cent of universities gave a rating of high importance to regional economic development in the mission of their institution, and only 5 per cent rated it as being of low importance. The

⁴³ Communication from the Commission, *The role of the universities in the Europe of knowledge* http://europa.eu.int/eur-lex/en/com/cnc/2003/com2003_0058en01.pdf access date 02/09/03.

⁴⁴ "The evidence from the UK suggests that the extent of the local and regional involvement of institutions is currently patchy, but that it needs to turn to active and systematic engagement. While throughout this report we advocate institutional autonomy and diversity, with institutions free to identify for themselves the balance between consciously local, national or international roles, we are clear that each locality or region needs the engagement of higher education. The form of this will rightly differ from institution to institution. We exemplify below the ways in which institutions are already engaged and conclude with recommendations which will help institutions enhance the effectiveness of their local and regional engagement to the mutual benefit of themselves and their localities" (NCIHE, 1997, 12.7).

prioritisation of economic development had also increased since a survey for CVCP (now Universities UK) in 1993, with 78 per cent of universities regarding it as having increased and 22 per cent seeing a similar level of prioritisation. No respondents thought that regional economic development had become a lower priority in recent years (Universities UK/HEFCE, 2001a: 24).

The Dearing Report recommended that HEFCE encourage the formation of regional consortia following the North East model to co-ordinate service delivery and collaboration in meeting infrastructure costs (Benneworth and Charles, 2001:143). Consequently, the HEFCE, responding to government regional agendas, encouraged each region to establish an association to represent regional HE interests (see Chapter 8). Since late 1997 HEFCE has employed a Regional Consultant in each of the English regions. The prime responsibility of these Consultants is to be the point of liaison between HEFCE and the individual HEIs in each region.⁴⁵ The UK higher education policy has not been ‘regionalised’ in a general term, but the ‘regionalising’ process of higher education has been ongoing with inter-organisational and some inter-regional collaboration programmes growing between universities. The government has been encouraging such a ‘regionalisation’ of higher education, or at least, encouraging universities to think more about their regional cooperation responsibilities.

The Different Dimensions of Regionality

However, in general, it has been considered that the current English regional boundaries are not very meaningful to many universities. There are some examples, notably the North East, where the region is cohesive and there is significant activity on the part of the local universities relating to the region. However, in most cases universities are as likely to relate as much to others outside as within the region (SQW, 2000b: 4).

Generally, university collaborations, like those of private companies, are seen to be motivated by a desire to improve their national or international position rather than to satisfy any particular regional agenda.

According to the *Regionality Study* conducted by SQW (2000b) for HEFCE, researchers do not see regional links as sufficient to sustain leading-edge research capability on their own.⁴⁶ Many consider that the regional impacts of their research will be maximised through an outward looking (national and global) approach rather than an inward focus on the region. Therefore, paradoxically, a “regioncentric university orientation” (Hagen 2002:206) will not assist regional economic development in the globalising knowledge economy. The UK universities, for example, have a growing number of research links involving trans-national/trans-regional institutional collaboration and public-private partnership formation, many of which have been thanks to European research programmes.

In addition, where universities have adopted an explicitly local focus this is often at the sub-regional level (typically the major metropolitan area) rather than at the regional level. In terms of research activities, it is important to note that, with the partial exception of ERDF, at the moment, there are virtually no regionally-based *research* funds available in England. As a result, while almost all universities consider it part of their mission, and also in their own interests, to contribute to the development of their

⁴⁵ Their remit includes liaising with RDAs and GOs in assessing HEFCE funding allocations such as those to the HEROBC and funds aimed at widening participation (Potts, 2002:998).

⁴⁶ In 2000, HEFCE commissioned seven studies as part of its fundamental review of its research policy and funding. A “regionality” study was among those seven studies. The other studies commissioned to assist review were as follows:

- Assessment and the Changing Nature of Research;
- How the Research Assessment Exercise has Changed the Research Base;
- International Approaches to Research Policy and Funding;
- Collaborative Approaches to Research;
- The Role of Selectivity and the Characteristics of Excellence; and
- The Interface between Teaching, Research and other Activities.

‘HEFCE Review of research policy and funding – Consultancy reports and other evidence’

region, regional considerations do not generally have major direct impacts on research strategies. Instead, universities engage in regionally based-research only when this fits in with their more general research objectives (SQW, 2000b: 4).

However, the growth of third-stream funding discussed in Chapter 4 (p.128-130) has pushed the ‘regionality’ agenda of universities further towards their regions. Box 5.2 summarises recent policies and third stream initiatives, leading to the regionality agenda, most of which were discussed in Chapter 4.

Box 5.2. Summary of White Paper, Policy initiatives and Reviews affecting ‘regionality’ of universities

1997	National Committee of Inquiry into Higher Education (<i>the Dearing Report</i>)	
1998	Competitiveness White Paper, <i>Building the Knowledge-driven Economy</i>	
	University Challenge Fund	(UK wide)
1999	Higher Education Regional Development Fund (HERD)	
	Higher Education Reachout to Business and Community Fund (HEROBC)	(England only)
	Science and Enterprise Challenge Fund	(UK wide)
2000	Science and Innovation White Paper, <i>Excellence and Opportunity</i>	
2001	Enterprise and Innovation White Paper, <i>Opportunity for All in a World of Change</i>	
	Higher Education Innovation Fund (HEIF)	(England only)
2002	HEFCE, <i>Higher Education-Business Interaction Survey (HEBI)</i>	(England only)
2003	White Paper, <i>The Future of Higher Education</i>	(England only)

The White Paper, *The Future of Higher Education* (DfES) published in January 2003, states that the involvement of universities and colleges in regional, social and economic development is critical. Stronger partnerships are encouraged between HEIs in each region and their RDAs and other agencies charged with promoting economic development (DfES, 2003:36). Furthermore, according to the White Paper, RDAs will be given a stronger role in steering the expanded Higher Education Innovation Fund (HEIF):

We wish to engage regional development agencies (RDAs) more closely in the distribution of HEIF funding, to make sure that it is properly focused on regional development priorities. From 2004-05, RDAs will have a larger formal role in how HEIF is distributed (DfES, 2003:38).

The White Paper proposes that RDAs be given a greater role in steering the new £90 million HEIF to support reach out from universities to business. As already mentioned in Chapter 4 (p.130), it also proposes to make available additional funding via a new strand of HEIF, to create a network of around 20 Knowledge Exchanges, which encourage good practice in interactions between less research-intensive institutions and business”. It is required for each Knowledge Exchange to demonstrate that its work “fits into the RDA strategy and helps serve the local and regional economy” and “a capacity and willingness to work with other universities and colleges to spread good practice and help improve their performance” (DfES, 2003:39).⁴⁷

Prior to the advent of HEROBC funding, there had been smaller national initiatives with varying degree of impacts. In 1999, the then Department for Education and Employment (DfEE) financed the Higher Education Regional Development (HERD) fund, with the aim of increasing the contribution of higher education to regional competitiveness by developing its responsiveness to local or regional employment markets and, fostering partnerships between HE, employers, and other organisations which seek to enhance the region's human capital.⁴⁸

Table 5.5 shows HEROBC and HEIF allocations by region against Quality Research funding and student per population ratio. This totals all individual and collaborative assistance. There are more collaborative bids in the second round of HEROBC⁴⁹ and HEIF, as was encouraged by the funding council. The collaborative bids build on the institutions’ individual HEROBC funding to establish and co-ordinate the inter-institutional and regional activities of higher education institutions.

⁴⁷ Each Knowledge Exchange will receive up to £500,000 for each of five years. Proposals will be invited from individual institutions or institutions working in consortia with other higher education institutions or local further education colleges (DfES, 2003:39).

⁴⁸ The Higher Education Regional Development fund (HERD)
<http://www.dfes.gov.uk/dfee/heqe/herdintr.htm> access date 13/02/03.

Table 5.5 The scale of HEROBC (Round 1 and Round 2) and HEIF allocations by region against QR funding and student to population ratio (£000)

	HEROBC Total Round 1		HEROBC Total Round 2		HEROBC Total Rounds 1+2		HEIF		% of QR Funding 2002-3	Student % Populati on
NE	3,122	5.2%	1,429	6.9%	4,551	5.6%	3,175	4.2%	4.6%	5.6%
NW	6,050	10.1%	4,211	20.3%	10,261	12.7%	10,675	14.2%	10.7%	13.5%
YH	5,333	8.9%	2,475	11.9%	7,808	9.7%	4,479	6.0%	9.9%	12.2%
EM	6,625	11.0%	825	4.0%	7,450	9.2%	5,787	7.7%	6.1%	8.9%
WM	6,965	11.6%	1,925	9.3%	8,890	11.0%	7,858	10.5%	6.8%	10.1%
East	4,386	7.3%	925	4.5%	5,311	6.6%	8,914	11.9%	10.3 %	7.0%
London	11,454	19.0%	6,247	30.2%	17,701	21.9%	12,583	16.7%	26.8%	21.3%
SE	8,502	14.1%	1,575	7.6%	10,077	12.5%	15,495	20.6%	17.9%	13.5%
SW	6,617	11.0%	1,100	5.3%	7,717	9.5%	6,202	8.3%	6.2 %	8.0%
Open Uni.	1,100	1.8%		0.0%	1,100	1.4%			0.7%	
Total	60,153	100%	20,713	100%	80,867	100%	77,774	100%	100%	100%

(Sources- compiled from HEFCE 2000a, b; 2002b) ⁵⁰

As discussed in Chapter 4 (see p.126-7), another recent national initiative promoting entrepreneurship that has regional implications is the Science Enterprise Challenge launched in February 1999 by DTI. ⁵¹ Table 5.6, which relates Science Enterprise Centres (SECs) to the proportion of regional HEIs involved, shows a great

⁴⁹ There were two rounds of bidding under HEROBC. Collaborative bidding was encouraged by HEFCE for the second round for those institutions who had made single institutional bidding in the first round.

⁵⁰ The HEROBC allocation against student population ratio was calculated by Mr. Keith Burnley of NWUA. The calculation for HEIF allocation was done by the author. The regional boundary is based on HEFCE (2002a). Names of the regions are abbreviated. Data for the Open University was only available for HEROBC. Data on Quality Research funding was prepared on 20 March by HEFCE Analytical Service Group. See Chapter 4, p.116-7.

⁵¹ It is intended to encourage the transfer of science and technology innovation from HEIs to the business sector and to promote entrepreneurship education. A total of £28.9 million has been allocated so far by means of a 'challenge competition', leading to the establishment of thirteen SECs in universities around the UK. The Centres form part of the UK Science Enterprise Network, the hub of which is the Cambridge-MIT (CMI) partnership, and also form part of the National Competitive Network (NCN) (see Chapter 4 p.130).

range in the extent of number of HEIs engaged in the region. See Appendix 5.2, for detailed description of each SEC in relation to the region.

Table 5.6 Science Enterprise Centres in English regions with numbers of HEIs

<i>Region</i>	<i>SECs</i>	<i>HEIs</i>	<i>Ratio</i>
North East	North East Centre for Scientific Enterprise	Durham lead institution, New castle and other 3 HEIs	5 out of 6
North West	Manchester Science Enterprise Centre	Manchester, UMIST, support from Manchester Metropolitan and Salford	4 out of 16
Yorkshire and Humber	White Rose Centre for Enterprise	Leeds, Sheffield, York	3 out of 13
West Midlands	Mercia Institute of Enterprise	13 HEIs in the region	13 out of 13
East Midlands	Nottingham Institute for Enterprise and Innovation	1 st round- Nottingham 2 nd round	1 out of 10 and now 10 out of 10
East of England	Cambridge Entrepreneurial Centre	Cambridge	1 out of 11
London	* ⁵²	See footnote	4 SECs out of 41
South East	Oxford Science Enterprise Centre	Oxford	1 out of 25
South West	Bristol Enterprise Centre	Bristol (with two other universities)	1 out of 14

⁵² There are 4 SECs in London: Centre for Scientific Enterprise (University College London, London Business School); The Entrepreneurship Centre, Imperial College; KCL Enterprises Ltd.(Kings College London); SIMFONEC(Science Ideas to Market, Focused on Enterprise and Commercialisation), (City University; King's College London; Queen Mary; University of London; Royal Veterinary College).

There are also a range of skill-based local schemes concerned with the employability and retention of graduates in the local area. There were formerly the remit of Training and Enterprise Councils (TECs), now replaced by Learning and Skills Councils (LSCs, see above p.147). New Technology Institutes (NTIs) were announced in the 2001 White Paper on Enterprise, Skills and Innovation. The first purpose of NTIs is to meet regional needs for people with higher skills in ICT and other advanced technologies.⁵³ The second aim is to improve advice and support to SMEs through improved links with higher education and further education. Another example is Business Fellowships scheme, run in partnership with the DTI and HEFCE. The Fellows forge new partnerships which will transform relationships with local and regional partners (see Potts, 2002:995).⁵⁴

Issues of graduate employment and links between employers and universities are increasingly important at national as well as regional levels.⁵⁵ On the supply-side, 32 per cent of school-leavers now enter HE (a figure the government wants to raise to 50 per cent) and graduate jobs in Britain are projected to rise by over 1.7m by 2010 (Floud 2001; Universities UK/HEFCE 2001a cited in Potts, 2003:989). In addition,

⁵³ The February 2001 DfEE/DTI White Paper on Enterprise, Skills and Innovation, *Opportunity for All in a World of Change*, set out the next steps that government, business and individuals need to take to ensure economic success in the decades ahead. The package of measures announced in the White Paper included the establishment of New Technology Institutes (NTIs). NTIs will work with all the key regional agencies and networks to achieve their aim of helping to close the information technology skills gap." HEFCE is leading on establishing NTIs, working in partnership with LSCs, and chairing a national NTI Steering group including representatives from the DfES, DTI, e-skills NTO, Ufi learndirect, and South East RDA. In a two stage bidding process, all bids have been assessed by both Regional Advisory Groups and the national Steering group.

<http://www.hefce.ac.uk/news/hefce/2002/NTIs.htm> access date 15/08/03.

⁵⁴ Some support for continuing vocational education also came through the EU's Leonardo Programme. Despite these shifts, such Continuing Vocational Education (CVE) activity has remained small-scale relative to the overall sums dispensed through block grants (Potts, 2002:990).

⁵⁵ Higher Education has come to be increasingly concerned with economic outcomes. HEFCE guidelines for its Teaching Quality Assessment Exercise suggested that aims for any programme of study should include preparation for the world of work, including satisfaction of professional body requirement, and the development of generic or transferable skills (HEFCE, 1995).

HEFCE has also recently announced its intention to introduce a performance indicator related to employment outcomes for full-time students. This indicates that employment is seen as critically important to the HEFCE-funded learning and teaching strategies (Potts, 2002).

employability has now been identified by HEFCE as a formal benchmark of HE performance. On the demand side, an important shift is the increased graduate recruitment by SMEs due to the major increase in the numbers of graduates, the inability of the traditional (corporate) graduate recruiters to employ these extra graduates in graduate level jobs, and the growing recognition that small firms need higher level skills to be competitive.⁵⁶ With the advent of RDAs, these issues are increasingly addressed at a regional level (e.g. see below, *Frameworks for Regional Employment and Skills Action* (FRESA)).

There are different dimensions of ‘regionality’ for universities in teaching, research and third stream activities.⁵⁷ The significance and priority of third stream activities and the dimensions of regionality differ for each institution. New universities are far more embedded in their locality in terms of both student population/teaching and links with industry (research and knowledge transfer). Old universities have much a wider national and international orientation as well as regional links both in terms of student population and industry. Both new and old institutions are facing growing global competition and the internationalisation of activities in higher education in general. Therefore, the ‘regionalisation’ of higher education is a highly uneven process and, the regional agenda has to be located in the complex and multi-scalar geography of

⁵⁶ University-SME links are often, owing to resource constraints upon smaller firms, best conducted locally or regionally (DfEE 1999). Regional variations in the *average* technological innovativeness of firms make it likely that the opportunities to forge university-employer links and to encourage graduate retention will vary between regions. Notable here is the fact that London, the South East and Eastern England alone already contain nearly half of all UK hi-tech firms and half of its hi-tech jobs – considerably in excess of their share of the nation’s population (Potts, 2002:988).

⁵⁷ At regional level, expansion of teaching at universities will happen through three routes (SQW, 2000b: 13). The first is the expansion of the home student base, principally by widening access programmes, as well as by being promoted by the prospective introduction of higher student fees. Secondly, it is expected that universities intend to collaborate with their RDAs to increase the number of overseas students although the interview results proved that this is not always the case. Some regions (e.g. London) seem to be more keen on collaborative recruitment of international students who pay higher fees but, for most of the universities, this seems to be an area of severe competition rather than collaboration. Thirdly, at a regional level, it is expected that universities intend to work together to co-ordinate and expand current provision of continuous learning including CPD courses through post experience courses.

universities' activities. The central concern of this thesis lies in the emerging links between third stream activities and such a new regionality of universities, which will be explored in the subsequent chapters.

RDAs and Universities

Thus, RDAs are encouraged by government to forge links between business and universities. In a collective response to Ministers in July 2000, the RDAs stressed that radical action is needed to 'incentivise' universities to become much more heavily involved in working with business and in developing their regional economies. As a key to this involvement, the RDAs see examples in the regional alignment of courses and research; in links with business clusters; and in intensification of HEROBC-type activities (SEEDA, 2002a). In all English regions, the Regional Economic Strategies (RES) prepared by newly created RDAs seem to be emphasising the role of higher education in regional development.

Clearly, there is a general consensus among many RDAs that technology and knowledge transfer from universities to regional companies will benefit the regional economy (e.g. ONE, Yorkshire Forward, EMDA, AWM, SEEDA, SWRDA). It seems also that there is a belief among some RDAs that the level and effectiveness of R&D among regional private sector companies can be raised by links to the relevant research departments of regional universities (e.g. ONE, SEEDA, SWRDA, EEDA, NWDA, Yorkshire Forward). For example, EEDA (2001) states that "the East of England needs to maximise its private sector R&D strengths and exploit fully the impact of its university and college sector by developing relevant research capabilities".⁵⁸

⁵⁸ EEDA (2001) *East of England 2010: prosperity and opportunity for all*.
http://www.eeda.org.uk/doclib/21029_PDF_5.pdf access date 15/09/03

As already mentioned, most RDAs are involved in development of clusters of some sort. The fact that a region contains universities with specialised research departments that are of relevance to particular industry sectors is seen as a rationale for promoting the growth of those industries within the region. Some RESs emphasise the role of higher education in the development of clusters in particular sectors (e.g. ONE, NWDA, EMDA, AWM, Yorkshire Forward). For example, AWM states that it “will aim to strengthen the existing links between higher education and businesses, as well as improving information to businesses on technological developments” and “will investigate developing a ‘High Tech business cluster’ in the region”(AWM, 1999) (for the case study of the West Midlands Region, see Chapter 7).⁵⁹ A specific example mentioned by EEDA is of “internationally-recognised research facilities within the region's universities that work well with the international business community and have provided the focus for clusters of high-growth businesses to develop around them.”⁶⁰

Using the research base of the universities in a region to attract foreign companies to locate in that region can be another link between RDAs and universities.⁶¹ Another role is to use the existing research strengths of universities in a region to attract corporate and R&D facilities to the region. In the North West, the economic priorities of the universities and the region coincided in the debate over the siting of the new Diamond synchrotron radiation source (SQW, 2000b: 12). The RDA and the Manchester Universities worked closely together to try to keep Diamond in the North West Region (see Perry, 2003).⁶² This can be seen as part of the big picture of the

⁵⁹ AWM (1999) *Creating Advantage*.

⁶⁰ *East of England 2010: prosperity and opportunity for all* (2001).

⁶¹ Cambridge University has attracted a number of foreign research institutions to the area. One example of this is the decision by Microsoft to locate their Research Centre in Cambridge.

⁶² Despite widespread support in the North West region, it was announced that the DIAMOND Synchrotron Radiation Source would be located in the South East in order to “place British science at the forefront of global research” (Lord Sainsbury, 2000 cited from Perry, 2003:2; see also Charles and Benneworth, 2001; and see above p.151).

emergence of regional science policies in the UK exemplified by the establishment of Regional Science/Industry Councils in some of the regions (see above p. 152, and see below for discussion).

A view of the role of HEIs which is more traditional is that of being providers of skilled employees. In October 2002, *Frameworks for Regional Employment and Skills Action* (FRESA) were developed by regional partnerships led by RDAs. Each FRESA was guided by the national template which provided a structure based around a labour market analysis and an action plan. The FRESAs set skills and employment firmly within the context of the overall development of their regions, reflected in their respective RES. Higher education in the region is one of the main actors especially in terms of increasing participation and attracting and retaining graduates. Higher Education Regional Associations (HERAs) represent HEIs in each region for FRESA (see Chapter 8, p.310). Apart from FRESAs, each individual RDA has worked closely with HEIs within their boundaries to establish graduate retention schemes and student placements which encourage forging links between students and local employers (e.g. Yorkshire and Humberside, South West see Chapter 8). SEEDA (2002b: 34) states that “the region’s universities will be encouraged to play an active role in contributing towards the success of the region through skills development, transfer of knowledge and expanding the number of graduates working within smaller companies.”⁶³

Research conducted for HEFCE confirms that, in all the regions, “concrete progress is being made to ensure meaningful dialogue between the RDA and the higher education community”. However, the report goes on, “the level of co-operation between the universities and RDAs varied quite markedly from region to region” (SQW, 2000b:

⁶³ SEEDA (2002), *Regional Economic Strategy for South East England 2002-2012*.
http://www.seeda.co.uk/res/docs/RES_Main_Web.pdf access date 15/09/03.

13). Chapter 8 explores this point further through investigation of the HERAs and other higher education consortia established in each region in England.

Emergence of a New Strategic Context

In the aforementioned report published in May 2003, Michael Porter emphasises the role to be played by universities in fostering the competitiveness of the whole nation and its regions.

universities and other educational and research institutions have also become increasingly important factors for national and regional competitiveness. Traditionally, they have been important in improving the skill base of the economy. But a shift in the way research and development (R&D) is organised is now also strengthening their role in commercial R&D. In the past, universities did basic science, while companies worked separately on applications for commercial use. Today, these boundaries have blurred, and successful R&D often involves cooperation throughout the innovation process (Porter and Ketels, 2003:30).

The key question arises as to what mechanisms can be built to realise the potential of universities to assist achieving national and regional competitiveness. As reviewed in Chapter 4 and in this chapter, architectures for the regional knowledge economies have been built by two parallel policy processes implemented by the New Labour Government. One is the devolution process and the other is industrial and science policies promoting the knowledge economy with their focus on enhancing university-industry links. There are new institutional actors such as RDAs, HERAs, and other higher education consortia, along with new individual actors who are engaged in forging regional partnerships and university-industry links. The rest of the thesis examines the new emerging architectures of regional knowledge economies with strategic actors set within strategically selective contexts (see Chapters 6, 7 and 8).

According to Davies in *THES*, 21 March, 2003, Sir Gareth Roberts, president of Wolfson College, Oxford, and an early board member of the Yorkshire Forward RDA,

told the House of Lords science and technology select committee that “although RDAs were in the best position to foster university-industry links, they lacked the necessary experience”.

In England, we need a few years to build confidence to get academics to trust them. Science was not mentioned in the RDAs three years ago. Universities are now very big businesses that know how to manage large research budgets. RDAs don't have that experience... There is a feeling that the RDAs in England are not mature enough to distribute the money (Davies, *THES*, 21 March, 2003).

Sir Gareth suggested that intermediaries along the lines of the North West Science Council were the best way to broker the relationship between universities and industry. The recent development of ‘Regional Science/Research Councils’ in some English regions provides an example of strategic regional networking processes involving universities. The ‘Regional Science Council’ concept, developed by Arthur D. Little, reflects the central need to “bring together at the strategic level the key stakeholders” (Brown, 2002) influencing R&D in the region. The North West and the North East Councils have business leaders, Vice-Chancellors of universities and other public organisations such as the NHS as senior membership, and the RDAs provide secretariat services (for the North West Region, see Cooke, 2003a: 17-8). Lord Sainsbury acknowledged that the RDAs working with Regional Science and Industry Councils have “already done much to improve links between universities and regional economies”⁶⁴. In February 2003, in response to encouragement from Lord Sainsbury to form science and industry councils, the South East Science and Technology Advisory Council (SESTAC) was formed with membership which includes senior industrialists and vice-chancellors. It is chaired by the Vice Chancellor of Southampton University.

⁶⁴ “I believe that these councils can play a major role in bringing together universities and industry in the regions and providing the best environment for local clusters, and we are now encouraging other regions to set up similar organizations” (Lord Sainsbury, 2003).
http://www.unisdirect.com/conference/programme/presentations/Lord_Sainsbury.pdf access date 06/02/03.

This has to be seen in the light of the already unbalanced distribution of funds for research between the North and South of the country (see above p. 139). National science policy is being challenged by demands for a regionalised science and technology policy by the English regions. These processes can be seen as the emergence of a new strategic context which serves as an “apparatus to stimulate scientific knowledge management from exploration to exploitation” at a regional level (Cooke, 2002:29). Yet there is little policy understanding or academic analysis of the consequences of this shift for national science policy or the significance of the emerging regional knowledge economies.⁶⁵

CONCLUSION

Thus, there is a tension in government regional policy at different geographical levels. Government policies aim at reducing regional disparities but, at the same time, existing policies aiming at national competitiveness and excellence through science and innovation in the global economy seem to reinforce the existing structural differences between regions. In terms of regional policy, each region is located in a unique historical, socio-economic structure which is conditioned by local historical factors as well as current national and European policies. European regional policy aims to alleviate regional socio-economic disparities through spreading innovation and learning. The significance of European funding in relation to regional development processes involving universities as one of the main players has to be recognised. These intersections between policies at different geographical levels influence the resources and management mechanisms of universities in each region.

⁶⁵ A research project named 'Making Science History': The Regionalisation of Science Policy? is conducted at the Centre for Sustainable Urban and Regional Futures (SURF), University Salford supported by the ESRC Science in Society programme.

The processes of regionalising the knowledge economy are accelerated by the coincidence, on the one hand, of devolution and Europeanisation and, on the other hand, of central government's policy incentives which drive the commercialisation and 'regionalisation' of higher education. One of the areas in which these policies and institutional processes come together is cluster policy which is being promoted by central government and is being implemented by RDAs and other regional bodies which include businesses and universities. Hence, new regional structures of *knowledge economies* are now being created. Regional Science/Industry Councils were initiatives of some northern regions, now promoted by DTI in every English region. These provide an apparatus of regional innovation systems, bridging the gap between knowledge exploration and exploitation sub-systems.

This chapter concludes Part II, in which two areas of policy, namely, higher education policy and regional development policy in the UK were set out. Each policy area has developed its 'organisational field' with institutional actors reacting to policies. Convergence between these two fields has been identified, in the form of complex 'regionality' of university activities. This may lead to a formation of new strategic contexts, provided with new multi-level architecture of regionalising the knowledge economy.

Part III

Networking Universities and Regions

Part III provides empirical research results from fieldwork conducted in three different spatial contexts. Chapter 6 gives institutional accounts on the recent history of the University of Birmingham and the geographical dimension of its activities, in particular, in relation to its region, the West Midlands. Chapter 7, in turn, looks at the institutional landscape of the Region in which universities, HEIs, and other regional partners are forming network relationships. Chapter 8, then, takes a broader perspective, comparing HE collaborative mechanism in the nine English regions.

Chapter 6

The History and Geography of The University of Birmingham

It is very difficult to change a university. This university is like a big oil tanker on the sea, changing its direction slightly. It takes miles before it turns to a different direction (The University Business Development Manager, on the changing culture of the University in relation to third stream activities).

A 10,000 mile journey begins with one step (A University Senior Academic, about the relationship of the University to the Region).

INTRODUCTION

This chapter focuses on the institutional transformation of one particular university. The University of Birmingham has been selected as the institutional case study for some practical reasons. The most obvious one is that the author belongs to the University as a student. Each university is different with its own history, resources and aspirations, yet all of them share similar remits, that is teaching, research and services to their communities. The purpose of the chapter is to look closely at the activities and organisation of one university in the light of the historical transformation of higher education in Britain and at its relationship with its region, the West Midlands. This complements the discussion in Chapter 7, which provides the historical, institutional and geographical contexts of the West Midlands Region (see also Appendix 7.1 for the backgrounds of the Region and the City of Birmingham). By looking at the transformation of one institution, the following key questions are asked:

- What should be the place of its region and regional development in the mission of the university in relation to the national and international dimensions of its work?

- Is there any tension perceived between the core activities of the university such as research and teaching and the regional ones and, if so, how is the tension to be resolved?
- What kind of institutional mechanisms does the university need to develop in order to meet the forces of regional competition and collaboration, both of which are encouraged by central government? What mechanisms have been developed and do they work?

The aim of this chapter is to focus on the interrelationships of the many different activities of one university, and to present the changing landscape of higher education and the region from the point of view of one institution and the individuals within that institution rather than that of the higher education system in general (as in Chapter 4), the regional innovation system (as in Chapter 5) or the viewpoints of bodies such as the national government, regional agencies or regional consortia of HEIs (Chapters 7 and 8).

The first section gives a short review of the 100 years history of the University of Birmingham highlighting its local roots, expansion, and the changing relationship with the state and within the West Midlands Region. The second section gives consideration to the spatiality of the University's activities including those at the local, regional, national, European, and global scale, by identifying structure and agency factors that influence the University's behaviour. The results of interviews conducted at the University are presented to reveal the perceptions and strategic actions of individual actors who are part of the institutional agent, and influenced by the wider structure. The third section links the experience of the University of Birmingham to the wider higher education landscape in the multi-level governance structure of innovation and knowledge production now developing in England and elsewhere.

6-1 THE HISTORY OF THE UNIVERSITY

Evolution of the University

The University of Birmingham is an organism which has been evolving in a particular but changing context (Ives et al., 2000:xiii). It is the aim of this section to provide an overview of the historical, economic and social dimensions of the institution over a substantial period of time, and to link it to the teaching, research and other dimensions of the activities of the University.¹

The distinctiveness of a particular university can be a reflection of the part played during its initial development by the “symbiosis between the institution and its hinterland”(Ives et al., 2000:xiii). The predecessor of the University was Mason Science College, founded as Josiah Mason’s “ideal of a utilitarian knowledge factory”.² The University, one of the civic universities, was founded through the initiative of Joseph Chamberlain in 1900 by some citizens of Birmingham who wanted their own university to train and educate the people who would create and manage the burgeoning businesses and industries of the Midlands.³

It was natural, given the nature of Birmingham's industry and the international competition hitting British mining and manufacturing at the time, that the University should, from the start, teach the major scientific and engineering disciplines. The description of the early days of the University illustrates the extensive links that the University had with local industry and its interests.

¹ Ives et al., *The First Civic University: Birmingham 1880-1980:An Introductory History* published in 2000 as centenary of the University was useful in writing this section.

² This became Mason University College briefly.

³ On 23 February 1875, Sir Josiah Mason, the Birmingham industrialist and philanthropist, who made his fortune in making key rings, pens, pen nibs and electroplating, founded his Science College, the buildings of which were opened in Edmund Street on 1 October 1880. He had considered adapting either Queen's College or the Birmingham and Midland Institute, founded in 1854 for the diffusion and advancement of science, literature and art, but decided on a new institution and building. This laid the foundation of what became the University. In 1888, Joseph Chamberlain was speaking of “a true Midland University” as a future goal which “every Birmingham man” should keep “before him as one of the great objects of his life”(Ives et al., 2000:72).

The innovative courses in practical applied science and in commerce which gave the new University its own distinctive character, even regional flavour, were in two important cases a consequence of a specific Chamberlain technique. This was to raise start-up funds by encouraging specific firms and industries to sponsor schools and courses in their own areas of interest, a strategy that in turn helped to strengthen the University's links with the locality (Drummond, 2000:143).

One such innovation was the British School of Malting and Brewing, set up in 1900 with a £28,000 grant from the Midland Association of Brewers. The other novelty was the University's "practical mining school" established in 1902-3 with encouragement from "a great many mine owners".

The practical interests of the professors were matched by the provision, on many of the courses, of practical work geared to the needs of Birmingham and Midlands industry. Industrialists had a very direct influence over what was taught when they provided the University with examples of the machinery used in their own factories. As well as the involvement of professors and undergraduates in the application of science in a local context, the University, even in its early years, began to develop a research profile on the subject. From its very foundation the University of Birmingham had been intended as a research institution, pursuing "original research in all its branches" (Ives et al., 2000:na). It was also the first UK university to establish a Faculty of Commerce (see Smith, 2002; Nishizawa, 2002) and to incorporate a medical school.⁴ The modern

⁴ The history of Birmingham Medical School is a very important part of the medical history of the region as well as the nation. The history of the Medical School dates back to 1825. In the late 19th century, the transfer of the Medical School to Mason Science College gave considerable impetus to the growing importance of that College, and in 1896, a move to incorporate it as a University College was made. As the result of the Mason University College Act 1897 it became incorporated as Mason University College on 1st January 1898, with the Right Honourable Joseph Chamberlain MP becoming the President of its Court of Governors. Before 1897, the Medical School, then led by Windle, was pressing the need to be given the power to grant and validate its own degrees as a chartered University. Great medical teachers of international distinction that could be attracted to the Medical School were tiring of teaching students for external London degrees. The enthusiasm which the Medical School's advocacy generated, combined with the ceaseless work of Chamberlain and others, led to the granting of the Royal Charter by Queen Victoria on 24 March 1900. The Calthorpe family offered twenty-five acres of land on the Bournbrook side of their estate in July. The Court of Governors received the Birmingham University Act 1900, which put the Royal Charter into effect, on 31 May. The transfer of Mason University College to the new University of Birmingham, with Chamberlain as its first Chancellor and Sir Oliver Lodge as the first

University is equally distinguished in the humanities, education, social sciences and law, but has given up mining and brewing.

Expansion and State Control

The early days of the history of the University were characterised by its roots in the City and its close link with its locality. In 1930, at the Jubilee celebration, it was noted that the University owed many of its buildings, land and other property to local effort. The University's "roots are therefore deep in the communal life which surrounds it". The expansion of higher education was predicted in the same event in 1930:

The lines of development of the University can be predicted with little uncertainty - there is among the masses of the people a real demand for higher education. There will be a leaning towards science but no studies of real value to the community will be neglected. This expansion of the curriculum will result in an early growth in number of undergraduates. 2,000 to 2,500 is considered by many as the ideal number. ⁵

The University went through two World Wars, during the first of which the Edgbaston buildings became a hospital, and experienced a significant a student protest in the 1960s. After the Second World War, with the growth of research, as a leading research institution, the University became more an international and national institution and less a local institution though there have been always links with the locality.

Until after the Second World War, change in the numbers, backgrounds, composition and subsequent careers of Birmingham students remained limited. By contrast, the changes which took place from the 1950s were fundamental. Student numbers expanded, Birmingham's catchment area ceased to be dominated by the West

Principal, was complete. Under the leadership of Sir Gilbert Barling, Dean from 1905 to 1912, the full integration of the Medical School (now the School of Medicine) within the University proceeded rapidly. In 1911 the newly constituted Clinical Board granted honorary university status to all clinical teachers in associated hospitals.

<http://www.medicine.bham.ac.uk/history/> access date 17/08/03. The Medical School and Queen Elisabeth Hospital are built on land donated by the Cadbury family.

⁵ Cited by Sir Dominic Cadbury, notes for Installation as Chancellor , Birmingham University, Tuesday 3 December 2002.

Midlands. Behind the student mobility, there are four factors. First, formal nationally funded universal student grants were introduced in 1960 replacing those relying on local authorities. The second factor concerns geographical mobility, the third heredity and the fourth mobility between social classes (Schwarz, 2000:375). The student generation of 1968 certainly came from further afield than any previous generation of students, and was also probably more selective and socially less broadly based than any previous generation of Birmingham students. The period between 1945 and 1980 is characterised as the University's "escape from the hinterland"(2000:375).

At its small beginning, the University depended on the generosity of individuals and businesses in Birmingham and elsewhere. Later on, it had to look increasingly to central government for its funding.

From enjoying complete autonomy in the conduct of its affairs it had to contend with increasing interference from government and its agencies (Jarratt, 2000:xi).

The 1970s had been a period of increasing financial problems for the University, and for the whole of higher education. The arrival of the Thatcher Government in 1979 posed the deliberate problem of the 'slimming down' of the public sector. By 1983-4, cuts imposed on Birmingham had accumulated to 17 per cent of its grants, which led to major reductions in staff numbers, both academic and non-academic (Ives et al., 2000:426).

Increasingly, universities also came under the influence of the managerial revolution of the 1980s with its exaltation of line management. The reduction in government support for higher education in the 1980s and 1990s brought no "rolling back of the frontiers of the State" other than financial.

In 1918-19, the government provided 38.5 per cent of Birmingham's income, but ministers were adamant that they were not assuming responsibility for the funding and direction of universities. In 1997/8, funding council grants provided only 32.7 per cent

of Birmingham's income, and yet ministers insisted that they had both the right and the capacity to direct higher education (Ives et al., 2000:426).

A revolutionary change in 1987 was the establishment of unitary direction within the University. A Strategy, Planning and Resources Committee was set up at the highest level, with authority over both the academic, commercial and financial aspects.

At every level of University activity, planning became the watchword – institutional plans, academic plans, business plans. Performance indicators arrived, and so, too, the regular appraisal of members of staff (Ives et al., 2000:427).

Steps were taken to encourage a clear sense of identity and purpose and a new corporate image.

Moving on to the Future

Efforts were made during the 1990s to reassert Birmingham's position as a university in the major league. 70 per cent of the areas of research at Birmingham achieved ratings of 'national' and 'international' quality in the UK survey published in December 1996. The University's performance in the RAE ranks 5th or 7th depending on which criteria is used, and the University has a wider range of submissions than any university except Cambridge.⁶ The growth of the University in terms of student numbers meant that with 25,312 students (2001-2), systems and structures have come under increasing strain. Annual income which the University has to manage reached nearly £280 million, for the year ended 31 July 2002,⁷ over eight times that of twenty years earlier. As for the estate, this is now valued at £536 million (Ives et al., 2000:426). See Table 6.1 below.

One particular aspect of development to be noted is a turning of the University towards industry during the 1980s and 1990s. During the 1980s, Birmingham University was earning more from links with industry than any other higher education institution and, in 1984, an Institute of Research and Development was launched in

⁶ Chancellor's speech on 3 December 2002.

collaboration with the City with the brief to transfer university expertise into industry. This is located in the University Research Park. The University established a technology transfer company, Birmingham Research Development Limited (BRDL), which is also located within the Institute of Research and Development on the Research Park. BRDL, the University's commercial exploitation company, along with the Office of Research and Enterprise Services, is responsible for promoting the links with industry. See Box 6.1 for figures between 2001-02 (September-July), which provide a snapshot of some of the links the University has with businesses.⁸

Box 6.1 The University's links with Businesses

- 18 patent applications filed
- 3 new patents granted
- 17 new licenses negotiated
- £500,000 earned from licensing
- 8 new start-ups and spin-out companies generated
- 80 CASE and 13 TCS programmes managed, transferring knowledge and expertise to businesses of all sizes
- 271 research projects managed involving partnering and input from business to a value of £5.5. million
- 294 consultancy contracts executed to a value of £4.4 million
- 2,825 undergraduate work-based placements made
- 16 staff specifically dedicated to support the provision of services to business
- Half of the University's governing body comprises individuals with a business or industry background

The year 2000 marked the University's centenary. The statement of the then Vice-Chancellor reads:

We shall engage in a programme of consultation with what are nowadays called 'stakeholders': our students, our staff, our research partners, those who support us and, of course, our alumni. The idea is that we shall arrive at a vision of the future university that is both achievable and attracts widespread support.⁹

⁷ The University of Birmingham, *Facts and Figures 2002-3*. Total income amounts to £279,521, 000.

⁸ The University of Birmingham *Facts and Figures 2002-03*.

⁹ 'Celebrations and Expectations'

http://www.publications.bham.ac.uk/birmingham_magazine/b_magazine1996-99/b99_3.htm access date 26/02/03.

The University of Birmingham added a ‘regional contribution’ to its new mission statement in 2000. This said the University is “proud of its origins in the City of Birmingham and of its first hundred years as an inspirational centre of learning, teaching and research”:

We will serve Birmingham and the West Midlands region using our skills and knowledge and drawing on our international reputation to promote social and cultural well-being and to aid economic growth and regeneration (cited from The University of Birmingham, *The University Plan*, 2002-7).

This can be seen as ‘a regional (re-) turn’ of the university which tended to see itself as a more national and international university rather than a regional one despite its links to its founders over a hundred years ago.

The University had a new Vice-Chancellor in 2001, and published the new strategic document already quoted, *The University Plan 2002-7*, in which it is stated that the University is “to be generally recognised as the best research intensive, broad-based university in the UK outside Oxford, Cambridge and London”. The rapidly changing external environment to the University and its future vision is set out in the document.¹⁰ The University has now set out a new strategy entitled ‘Enterprising Birmingham’ (BE).¹¹

Table 6.1 below summarises the basic facts and figures of the University.

“The University Council has decided that it would be a good moment to take stock and reconsider our mission. Now you may be cynical about mission statements, and I have to confess that in the university world there are many mission statements that are largely indistinguishable from each other, even though the institutions who own them are patently very different. We have decided that we want to have a mission that means something. We shall not just trot out the usual platitudes, but will attempt to devise a statement that speaks clearly about the modern university and what its purpose is. To get this right we need to do more than talk amongst ourselves.”

¹⁰ “It [*The plan*] is an internal decision of the University rather than a response to the government policies whilst it is important part of the environment scan to adapt to government policies. Having a new Vice-Chancellor in 2001 was a start of the process”[senior administrator, based on interview January, 2003].

¹¹ ‘Enterprising Birmingham’ <http://www.industry.bham.ac.uk/enterprise.htm> access date 11/09/03.

Table 6.1. Income and Expenditure Account for the year ended 31 July 2002

Income (£000)	
Funding Council Grants	90,622
Academic Fees and Support Grants	53,294
Research Grants and Contracts	68,048
Other Operating Income	64,406
Endowment Income	3,151
Total Income	279,521
Expenditure (£000)	
Academic Schools	194,264
Academic Services	20,348
Estate Management	22,862
Residences, Catering and Conferences	17,681
Corporate Services	16,817
Total	271,972

Professor Michael Sterling, the new Vice-Chancellor of the University, suggested that he would like to move towards more independent funding. With one-third of its income from HEFCE, he said there was no possibility of the University opting out.

That's still too much on our turnover of £289 million. In our five-year plan, we hope to reduce dependency on HEFCE. We'd be doing well if it went down by 10 per cent. ...The government offered us easy money in the 1960s and 1970s, and we took it. But the mood now is to regain our independence.¹²

In December 2002, Sir Dominic Cadbury was installed as the new Chancellor of the University. Being a successful international businessman in the locality, this installation seems to signify the University's local links with international activities. As Sir Dominic put it:

The size, diversity and international dimensions of the University have broadened the roots but not diminished the importance of the local ones. Successful institutions need both - the ambition to be world class in teaching and research while being

¹² http://www.thes.co.uk/search/story.asp?id=89125&state_value=Archive THES, access date 03/01/03.

knowledgeable and sensitive to local needs and opportunities. The University is doing this successfully.¹³

The present and future of the University is built on all these past achievements. For the specific interests of this thesis, the next step is to delineate the geographical dimensions of the University's activities linking these to its strategies and future directions based on the theoretical and policy discussions earlier in the thesis.

6-2 GEOGRAPHY AND STRATEGIES FOR THE UNIVERSITY'S ACTIVITIES

Structure and Agency Factors Changing the University's Behaviour

Institutional behaviour is influenced by the wider structure of the society in which it is located, such as government policy, funding and its historical resources. There are also more agency oriented factors such as the relationships with other stakeholders, its own current strategies and interests and the existing links with other institutions and potential markets as well as political and other opportunities which can be made available by collaboration. The previous chapters focused more on the structural factors which influence the behaviour of agents, such as policies and funding and the regional political economy. Nevertheless, it is also important to examine the ways in which third stream activities and their regional dimensions are formulated in relation to the perceptions of agents and in relation to universities' other activities, namely, research and teaching.

One of the agency factors this study hopes to delineate is the perception of the individual who forms part of the organisational field as an individual actor. Therefore this chapter firstly highlights perceptions of current government policies, the institutional policies and practices of the University, and the potential opportunities as perceived by individuals as actors in this wider structure. Secondly, the chapter illustrates the range of possible interrelationships between the different activities of the

¹³ Cited from Sir Dominic Cadbury, notes for Installation as Chancellor , Birmingham University, Tuesday 3 December 2002.

University. In addition, by illuminating the individual's perceptions of the wider structure and strategic contexts in which the University is located, the interactions between structure and agency factors are clarified. The following accounts are from a number of interviews with personnel with various remits and positions at the University.

Interview Results

The accounts below are constructed from the interviews based on the following interrelated criteria as to topic:

- Geographical dimensions of the University activities and its networks formation;
- Government policies (including the European, UK and resources from the RDA);
- Institutional transformation including third stream activities; and
- University strategies and potential opportunities as perceived by the interviewees.

These accounts are based on personal experience and observation rather than institutional views. Yet these accounts inevitably reflect the individual's position and remit within the University. In order to secure the anonymity of the interviewees, the following sections are organised according to themes rather than interviewees. Nevertheless, the job titles of the interviewees are presented when it is necessary (see Appendix 2.1 for the list of interviewees). Other sources of information include on-line sources about the University, published information, and various research reports and documents as identified in footnotes. The results of the interviews are presented under six sub-headings.

1. Strategic Multi-Spatiality

The University has recognised the increasing significance and the presence of current links with its region and locality. The importance of the *region* in the current geo-

political map of the UK is recognised by the senior administrative manager, the Secretary and Registrar of the University.

An important role is played by the University in providing graduates into the Birmingham economy. We haven't emphasised our regional role as much as we should. We are trying to do that through the new public relations office. But we have to be careful as we are an international and national as well as regional (institution). We use international links to link into the Region. International students enrich local communities. Also we work across regional boundaries [based on notes from interview, Secretary and Registrar January 2003].

Thus, the University presents itself as an international as well as a national and regional/local player. Amongst the University's 25,312 students, there are currently 4,212 international students (16.6%) from 148 countries around the world.¹⁴ Local recruitment has become increasingly important in recent years (see below), and at the moment the University has 5,384 students from the West Midlands, just over 21 per cent of the total student population. The Pro-Vice-Chancellor (Research and Knowledge Transfer) oversees the University's research programme and his remit includes increasing the income from research and knowledge transfer. The University is working towards a policy objective in each area. These include:¹⁵

- a. National policy: aim to be in the top ten universities in the UK in respect of research and knowledge transfer;¹⁶
- b. International policy: aim to have all our research programmes at international level; and
- c. Regional policy: aim to work with the RDA, both influencing its policy and benefiting from its cluster policy.

¹⁴ The University of Birmingham, *Facts and Figures*, 2002-3.

¹⁵ A note from Pro-Vice-Chancellor Research and Knowledge Transfer 10 January 2003.

¹⁶ The University is a member of the Russell Group, a consortia of 'research-led' universities in the UK. It is also a member of Universities UK, which "exists to promote, encourage and develop the universities of the United Kingdom. It provides services to its members, the executive heads (Vice-Chancellors and Principals) of all the UK universities and campaigns on their behalf".

The University's links with industry encompass a wide range in size and geography, national, international and increasingly with local industry. One of the problems is the existence of many funding streams with too much overlap, which creates lots of overheads. The University organises different funding opportunities through Research and Enterprise Services (see below, p. 204).

There are strong and growing links with industry and business in the Region and, most notably, the University is leading the public-private partnership in the development of the A38 High Technology corridor. Following the sale by BMW of Rover in March 2000 (see Appendix 7.1), the questions came up as to how the regional economy could be suitable and sustainable for the twenty first century as opposed to the twentieth century. The University got involved in this process as a landowner along A38.¹⁷

The Advanced Knowledge Alliance (AKA) was formed in 2001. This includes three universities (Birmingham, Aston and the University of Central England (UCE)), one higher education college (University College Worcester) and QINETIQ, the former Ministry of Defence's research institute in Malvern. AKA aims to contribute to the economic regeneration of Birmingham and Worcestershire along the A 38 by "making advanced knowledge, in the form of training, technology transfer, higher education learning programmes and the results of advanced research and other intellectual property, available to business in the area, to potential inward investors, and to others

¹⁷ The original partnership consists of six different bodies: Birmingham City Council; Worcestershire County Council; Birmingham Chamber of Commerce; Worcestershire Chamber of Commerce; Learning and Skills Council Birmingham; and research institute and universities. The two issues of: a) exploiting intellectual capital; and b) collaborating across political boundary were the background to the formation of steering group for A38 Corridor. The partnership was formed when the Rover Task Force was in operation [Prof. Clarke, based on notes from interview, December 2001]. See Chapter 7, p.226. A 38 Higher Technology Corridor is one of the key regional development strategies supported by Advantage West Midlands (AWM), the RDA. See Chapter 7, p. 236.

seeking to create new business opportunities”.¹⁸ Potentials are identified in the development of medical technologies and nanotechnology.

The launch of a Nano Tech Centre at the University is seen as the significant step to establish “the West Midlands Regions as a global force” in the commercial exploitation of the nanoengineering research.

The Nano Tech Centre is focussed on delivering high tech products to global markets emanating from the region's engineering, medical and scientific expertise in nanotechnology, with a mission to improve quality of life through sustainable growth in wealth and job creation. This will lead to new innovative nanotechnology-based products, new industrial partnerships and new companies along the A38 corridor and elsewhere in the region.¹⁹

AWM supports the Centre as part of its A38 High Tech Corridor programme through its regeneration strategy (see below, p. 204; see also Chapter 7 p.236).²⁰

The University is involved in a global partnership of universities as well as a number of national, regional and sub-regional partnerships and networks (see below for the regional networks). Since 1997, the University has been a founding member of a global consortium of research led universities, *Universitas 21*, part of whose aims includes promoting a global pro-profit distance learning along with more academic collaborative activities.²¹

¹⁸ University College Worcester, ‘Partnerships’ <http://www.worc.ac.uk/partnerships/partners/aka.html> access date 11/09/03.

¹⁹ ‘Nanotechnology Centre Launched to Work with Industry’ 17/12/01. <http://www.newscentre.bham.ac.uk/release.htm?releaseId=230&day=17&month=12&year=2001&keyword=&pageSize=10> access date 12/09/03.

²⁰ The venture is supported by Advantage West Midlands, Birmingham City Council and industry as part of a regeneration strategy along the A38 Science Corridor. Current partners have already established nanotechnology groups including Quinetic, Queen Mary College and the DTI. Building on total University nanotechnology grants in excess of £ 11 million, including participation in a £ 2.2 million ACORN project, it is anticipated that the centre will be supported through private and public finance.

²¹ *Universitas 21* was started in 1997 on the initiative of the V-C of the Univ. of Melbourne. It was the first institution of this kind. The background included pressure of the public funding, competition for student places, competition for research and need for international projects. It is a partnership of 18 universities that put emphasis on research, which started with Commonwealth universities in UK, Australia, Canada, New Zealand, Singapore, Hong Kong, and expanded into other

One of the key persons involved in the multiple-spatiality of the University's activities is the former Pro-Vice-Chancellor, now Vice-Principal, Professor Michael Clarke. In 1998, he became the Pro-Vice-Chancellor of the University of Birmingham to take responsibility for the University's external relations, which was partly to do with the local and regional dimension, and also to do with national agencies and international aspects. Professor Clarke chaired the management group, West Midlands Higher Education Association (WMHEA; see Chapter 7, p.257) and is involved in various regional bodies acting on behalf of all the HEI in the Region (e.g. at the West Midlands Chamber). He also represents the University of Birmingham on various regional bodies and partnership schemes including AKA along the A38 High Technology Corridor (see previous page).²²

It is a process of learning for each university, in its individual way, rather than all universities working systematically and collaboratively at the local level.

Universities have a number of important roles not only as the stimulus to the economy, for example, but actually as independent brokers and leaders in the process of learning. Precisely because they are not entrenched in the world of politics at local level or regional level, they are actually in a position to exercise independent leadership and brokerage, and that is the most important thing. In individual ways, individual universities inform strategies at the local level, but it is not done in a systematic way [based on notes from interview January 2003].

countries such as Sweden, Germany, and China. A move away from public funding is the common feature underlying the formation of the partnership.

However, other universities which joined later found international linkages more attractive than the issue of public funding. There are two main areas of activities

1. Academic wing: students, staff exchange; international projects, joint research, benchmarking, portable credits; and

2. Commercial wing: a joint venture corporation for distance learning.

²² He emphasised the changing environment surrounding universities and the growing expectation of the role to be played by universities:

"Had it been 5 years ago, there would have been far fewer organisations involved in partnerships with the University and the interpretation of the role of universities in local society and local economy has changed. Now the roles of universities are better understood from both sides. Universities are revisited as 'knowledge creators' for the local economy and local society. Discussion of the knowledge economy was not done so much several years ago. So things are coming together" [Prof. Clarke, based on notes following an interview on August 2001].

All universities to some extent, and research universities in particular, are not only serving the regional level, but they are also serving the national and international levels. The University makes a genuine attempt to relate together sources of funding, and “it doesn’t matter whether it is international, European, national or regional”.²³

Professor Clarke is responsible not only for local and regional affairs but also for *Universitas 21*, as a global link of the University.

When you are building a partnership, whether it is at international or local level, it is important to recognise that building a partnership takes time to allow familiarity between the partners so that trust is established. It involves a continuing process of building trust, identifying areas of potential synergies and gaining better understanding between partners [based on notes from interview January 2003].

Therefore, what is emerging is a multi-spatial strategic context for the University. The University forms part of various partnerships and networks across different geographical scales.

2. Regionality: Forming Strategic Networks

In terms of the relationship with the Region, the University’s engagement with the European supported programme, the West Midlands Regional Innovation Strategy (WMRIS), was a significant institutional catalyst for the University as an organisation, and RIS was important for the Region as a whole in providing a broad forum to assist dialogue between different sectors (see Chapter 7 p.231). The roles played by individual actors at the University have had significant impact in terms of the development of the regional collaborative mechanisms discussed in earlier Chapters. As Chapter 7 shows, the European Officer at the University has played an important catalytic role in collaboration with personnel at a local authority. The partnerships included local authorities, chambers of commerce, the Government Office of the West Midlands and

²³ “The University identifies synergies in funding streams which allow us to move forward the research

other public/private sectors that comprised the Regional Innovation Strategy Group and its Steering Group.

The formation of the RIS Steering Group was the first significant regional organisation that involved universities in enhancing regional innovation. The fact that an earlier but then new Vice-Chancellor of the University chaired the RIS Steering Group was a significant University's involvement in this process. Professor Maxwell Irvine was appointed Vice-Chancellor of the University in October 1996 when the proposal had just been submitted for ERDF money, and he was immediately asked to chair the WMRIS Steering Committee. Previous Vice-Chancellors were not so interested in regional issues.²⁴ Professor Irvine had been actively involved in the Scottish Agency and a Board member of Scottish Enterprise and thus, had understanding and experience of universities' involvement within their regions.²⁵ One of the staff at the University talked of Irvine as follows:

He had the idea that the image of the Region and the image of the University must be tied up. If the University wants to attract good students, the Region has to be attractive, not to be seen as 'backward' [based on notes from interview November 2001].

There had been a tension between the Government Office of the West Midlands and local authorities. By having a new Vice-Chancellor as Chair of WMRIS as a neutral figure, this tension between the regional and sub-regional governance could be bypassed, or at least reduced. Thus Birmingham University invented the scheme, and University of Warwick and Birmingham became the main players in WMRIS (see Chapter 7 p.231 and 256 for the detailed process of WMRIS).

interests of the University, and the research interests of the University will be influenced by the particular funding streams available" [Prof. Clarke, based on notes from interview January 2003].

²⁴ One "saw the University as institution 'disembedded' from the Region. He had no philosophical commitment to the regional agenda"[interview November 2001].

²⁵ He was previously the Vice-Chancellor of Aberdeen University.

There are other partnerships and networks at regional and city level. The University has forged a number of links with its locality especially with the City of Birmingham. The European Structural Funds available for Objective 2 areas in the Region have served as an important catalyst linking the research activities of the University to SMEs in the Region.

The Interdisciplinary Research Centre (IRC) was set up in October 1989. It is one of the national centres set up to encourage university-industry links promoting interdisciplinary research. An important change happened five years ago when the West Midlands Region was designated as a priority development area by the European Commission. It is traditionally a manufacturing area which has been in decline. ERDF money became available for regeneration and R&D.²⁶

Theoretically, it is supposed to help SMEs, but it doesn't work. Rather, through working with big companies, there are trickle down effects for SMEs through supply chains, but directly supporting SMEs is difficult. They don't have enough capability to take on new technology [based on notes from interview July 2001].

The development of WMRIS indeed served as a catalyst for the University to get engaged in the Region. Several departments at the University, such as physics and electrical engineering, submitted proposals for ERDF funding.

An academic staff member who has had experience of running a technology transfer centre for SMEs in the Region set up with the ERDF money mentioned:

We looked at the *Regional Innovation Strategy* document and checked the areas. The RIS highlighted some areas such as tourism, manufacturing, and ICT with which we work closely. We were encouraged to bid for ERDF money by someone at BRDL who had worked closely with the Government Office [based on notes from interview October 2002]

²⁶ "The European Officer of the University played an important role in bringing money of the order of £5-6 million to the IRC. As a result of this, the Net Shaping Building was built. It ought to do with manufacturing, assisting the West Midlands rejuvenation of industry. The biggest challenge for IRC in working with the Region is its relationships with SMEs"[based on interview February, 2002].

Initially the funding was for SMEs to capitalise on technologies in the department and to take that further into products and enhance existing business. However, small companies don't have money when the fund runs out and they just cannot keep the finance for the Centre to carry on and we have to work with bigger companies other than SMEs in Objective 2 areas [based on notes from interview February 2002].

In terms of ERDF money, to develop working relationships with SMEs and the requirement to meet the target put this particular academic under enormous pressure. The European funding provides potential opportunities and *strategic contexts* to work with the Region, but it is under structural constraints due to the time and financial pressure that SMEs are facing. The recent development of collaborative efforts for marketing and working together at the regional level (e.g. CONTACT, Regional Technology Networks; see Table 7.4 p.255) can be seen as *strategic actions* taken collaboratively by the actors. It is noteworthy that CONTACT is an initiative made by Vice-Chancellors and the existing Industrial Liaison Officers (ILOs) networks, whilst Regional Technology Networks are a network developed by academics engaged in the SME work themselves in order to maintain the expertise and networks they had developed over years (see Chapter 7, p.269).

A new unit entitled the Regional Innovation and Competitiveness Observatory was set up within the University as part of the Centre for Urban and Regional Studies, School of Public Policy. It is supported by the University's HEROBC money, and it materialised as a direct product of RIS network.²⁷

²⁷ The Observatory is a key regional resource to assist Advantage West Midlands to implement the RIS and its follow up through RIS+. In particular it is:

1. Continuing the process of in-depth analysis of innovation and innovation processes in different industrial sectors;
2. Examining sectorally based technological trends and the take-up of new technologies - particularly linked to Foresight;
3. Examining the processes of networking and cluster development in the region as a key element of innovation systems ie.
 - Mapping out existing clusters and their nature (supply-chain, industry groups, or wider clusters involving services, finance and research organisations);

3. Government Policies and the University's Strategies and Opportunities

The central government policy set out in the DfES White Paper, *The Future of Higher Education* (2003), posits the diversification of institutions (see Chapter 4, p 132-3). In the light of this, the criteria for, and the definition of, 'research-led' university is problematic.

One of the issues that government says is that research universities do *research* and new universities do more *outreach*. We don't agree because we are good at that (outreach), we have got skills. We do research with industry, and we form partnerships and networks that we cannot get out of. It is a long-term relationship. You just can't get things out of water and put them in again. Funding councils and governments have to understand that [Senior Administrator, based on notes from the interview January 2003].

How to define itself as an institution is an issue all institutions face from their own perspectives, and the government policy with regard to institutional collaboration on third stream activities affects the future opportunities and strategies of each institution (see Chapter 4 p.131). The White Paper on *the future of higher education* promotes further collaboration between the RDA and HE sector (DfES, 2003). In its response to the White Paper, the University presents its reservation on the RDA's influence on HEIF. The University:

welcomes the call for Regional Development Agencies to galvanise the business community to exploit the opportunities that higher education offers them, but rejects the idea that funding for higher education should be diverted through RDAs, adding a layer of regional bureaucracy to a complex international market.²⁸

It is true, though, that the University sees opportunities in the Region. As a senior administrator put it:

-
- Examining how new clusters might form e.g. by spin-out or by gradual evolution;
 - Examining how new and sustainable cluster development might best be supported by the innovation providers including the higher education sector;
 - Relating cluster development to inward investment actions taking best practice examples from other regions.

<http://www.industry.bham.ac.uk/innovation.htm> 19/08/03.

²⁸ Birmingham Gives "Constructive but Critical" Response to Government on *The Future of Higher Education* <http://www.newscentre.bham.ac.uk/pressrelease.htm> access date 04/04/03.

Regional funding is the key thing. Regional engagements only continue when the funding is available. Universities are big players in the Region. Business development offices of universities make sure that university resources are available [based on notes from interview January 2003].

Birmingham University, a 'research-led' university which has a more diverse range of departments than any university in England except Cambridge, is required to position the new HEIF initiative in relation to its own strengths and other main activities (teaching and research), in relation to other regional HEIs with different expertise and resources, and to the benefit to be gained from collaborative bidding (see Chapter 4 p 130; see also below p.206).

4.Organisational Changes, Strategies for Third Stream Activities and the Region

The Research and Enterprise Services, a central unit of the University, manages the third stream funding, as well as promotes the research activities of the whole University through finding research funding opportunities including funding from research councils, the EU and community related opportunities. Increasingly, it aims to serve as an interface between the University and the Region. The emphasis on the Region has been strengthened since the start of HEROBC. On its website, the University stated that:

- Research and Enterprise Services will integrate the University's proposals under HEROBC, ERDF and the actions arising from RIS to ensure that the University remains at the hub of the West Midlands economic and innovation strategies;
- Research and Enterprise Services will continue to enable the University to play a role in the A38 technology corridor developments following the SQW First Report ²⁹ as part of the Rover Task Force outcomes.

²⁹ SQW (2001) *Regenerating the West Midlands region: A study to consider opportunities for high technology corridors/clusters Stage One Final report to the Rover Task Force*. SQW, January 2001.

The Assistant Director (Business Development) of Research and Enterprise Services emphasises that third stream activities are an integrated part of the whole university activities. She says:

Given the complexity of the organisation, what has been achieved within the last 18 months is significant. However, it is important to bear in mind that third task is only 1 per cent of the total turnover of the University. Teaching and research is fundamentally the mission of the institution. Third task should not be seen as separate as something you are doing as a side line, but something you are continuously doing, along with teaching and research [based on notes from interview December 2002].

One crucial point is that the University has been reviewing its management structure to reflect the growing importance of third stream activities. This is based on the recognition that there must be a clear link about research and the third stream activities. Research and Enterprise Services has been instrumental in establishing the Research Sub-Committee of the Strategy, Planning and Resources Committee. This was established on 1 August 2002 in accordance with the *University's Action Plan 2002-07*, to advise the University strategically on research policy, superseding the Strategic Research Task Force. In 2003, a new Enterprise Board has been created above Research and Enterprise Services as a deliberate attempt to take a view of all third stream activities together. This Board intends to bring together the various threads of enterprise and innovation activities within the University.

Within third stream activities, there is a wide spectrum of activity. At one end the focus is on *output* activities, which includes spin-out companies, licensing new techniques and products, which is dealt with by BRDL.³⁰ At the other end, there is *outreach* activities, forming regional collaboration with industry and working with the community and it may encompass widening student access in localities. Research and

³⁰ These activities occur locally, nationally and internationally. BRDL does not have a particular focus on either regional or local links. They conduct business wherever opportunities exist [based on interview, June 2003].

Enterprise Services and BRDL, with Pro-Vice-Chancellor (Research and Knowledge Transfer), ensure the former. The Pro-Vice-Chancellor sits on BRDL's Board and ensures the links between the two. The latter is developing under the HEROBC I Outreach Programme which is discussed below. In terms of the organisational structure, the new umbrella Enterprise Board, that includes Research and Enterprise Services and all the people involved in outreach activities, was formed in early 2003. See Appendix 6 for an organisational diagram.

The 2002 Annual Report of Research and Enterprise Services states:

Having built up a large and successful group of staff specialised in various aspects of third task activity, it would be prudent to seek to sustain and develop this activity further. As the personnel involved are all on short contracts, attention is being paid to matters such as contracts, pay and promotion systems, as well as the whole way the University's strategy and planning around the third task is developed.

Plans are also being formulated to establish a Centre for Enterprise to draw together the extensive research knowledge and capability the University has in the field of enterprise, innovation and business development and to develop a publication series. This will "visualise" [Assistant Director (Business Development), interview December 2002] the services the University can provide to business and industry and will help to further legitimate the third task agenda within the University's academic community.

5.Outreaching to Industry and to the Region

The University was successful in securing £1.1 million from HEROBC I bidding, through which Outreach Fellows (often called Business Development Officers) were appointed who are half funded by the Schools and half funded by HEROBC money. The University is part of regional collaboration on third stream activities such as CONTACT (HEROBC II) and Mercia Institute of Enterprise (discussed in Chapter 7, p.264-66). With HEIF collaborative funding, the University was successful in making

bids both as part of Mercia Spinner (p.266) and MEDICI, which covers medical research institutions across the West and East Midlands.³¹ There are synergies and linkages formed across these several different strands of third stream initiatives funded by HEFCE, and in collaboration with other bodies such as DTI, research councils, the City Council, WMHEA, and the RDA.³²

Currently, much of the research which the University conducts is not supporting local industry in the Region. A senior academic expressed his personal view regarding the relationship of the University to the Region as:

In the West Midlands the skill level is low, and although some [university] departments have strong links with local industry, many of the research focus we are doing are not supporting old industry. We are very conscious of the Region but our Mission doesn't allow the University to serve only the Region. We can't be defective of our Mission. Changing the Region's status to be consistent with our Mission is the way forward. We are influencing RDA policy. That's the first step. ...In 30 years time we can see whether the University's Mission has really benefited the Region. A 10,000 journey begins with one step. We stimulate the growth rather than helping the Region's present status. That would be consistent with training young people with new skills [based on notes from interview January 2003].

This view presents 'a long-term' view prioritising the Mission as a 'research university'. But, as is shown below, the outreach activities aim to create further links to current local industry needs in order to help the Region's present status. The issue of reconciling different 'time scales' is raised by many interviewees who work at the interface between the University and the Region.

³¹ Based within five universities across West and East Midlands, MEDICI fellows have been appointed in the fields of medical and biosciences. See Chapter 7, p.260.

³² The recent work on Birmingham East Side through joint EPSRC and AWM package on Sustainable Technology is a good example of a collaborative research partnership with the University of Birmingham involving its different Schools, the City Council, the Research Council, AWM, Groundwork in Birmingham, another university (UCE in Birmingham, Department of Built Environment) and Business Links. AWM puts £60,000 as utilised for knowledge and technology transfer, and the Research Council, EPSRC, funds £180,000 as research money. The feasibility study commenced in January 2003.

The University of Birmingham's own Outreach Programme (UBOP) is delivered through HEROBC Outreach Fellows and, initially, six Fellows were appointed with the funding available in the HEROBC first round. They formed the Business and Industry Outreach Team based at Research and Enterprise Services.

"The purpose of the Business and Industry Outreach initiative is to encourage businesses and industry to access and use the university's research and development resources, and to help our own academics understand the benefits and potential pitfalls of working with business and industry. It is essential that we build stronger bridges between industry and academia and the appointed Fellows will really make a difference." [Assistant Director (Business Development), RSBD]³³

Fellows were appointed for periods of two to three years to implement an agreed development programme in specific areas against a business plan. The specific areas were decided with reference to the University's strengths set against the priorities laid out in the *Regional Economic Strategy*, the West Midlands response to the competitiveness agenda and the WMRIS (see Chapter 7 p.235).

The following Schools and a Centre have HEROBC Outreach Fellows as of September 2003: Civil Engineering, Electronic and Electrical Engineering, Chemical Engineering, Computer Sciences, Centre for Environmental Research and Training, Earth Sciences³⁴, Metallurgy and Materials, and Education³⁵.

A Fellow works as "a nodal point", "sales person of knowledge" and "facilitator" [Outreach Fellow, from interviews August and December 2001] within a School and the University. They work as an interface between industries and their own School, between Schools, and the School(s) and the University. They work closely with

³³ The office changed name from RSBD (Research Support and Business Development) to Research and Enterprise Services in 2002. The quotation is from <http://www.industry.bham.ac.uk/outreachteam.htm> access date 10/09/03.

³⁴ The School of Earth Science was merged in August 2002 and now is part of the School of Geography, Earth and Environmental Sciences.

³⁵ A Lifelong Learning Manager was initially appointed as HEROBC Outreach Fellow based at School of Continuing Education, which was later incorporated as part of a School of Education.

CONTACT field officers who are funded by HEROBC II and they are networked to other regional HEIs through an e-mail enquiry system. For example, through CONTACT, there are growing opportunities for student placements at local SMEs.

One of the HEROBC Fellows at the University, in the early days of his appointment, described his job as follows:

It is intended that an Outreach Fellow will make links between relevant industries and the School ...promoting awareness and widening understanding of recent advances in ...technologies and techniques. It is intended that links with business will be developed through the provision of site assessment surveys and evaluations and the design and delivery of training programmes. Innovative research ideas and proposals will be developed through these links with the intention of benefiting industry. It is also important that strong links are being forged between other Schools, e.g. Civil Engineering, where such partnerships can only prove beneficial in the advancement in understanding of environmental and engineering site assessment [Outreach Fellow, based on notes from interview August 2001].

The HEROBC Outreach Fellows are paid half by the academic Schools and half by HEROBC money through Research and Enterprise Services. This model has proved to be effective as the Fellows work as part of the School rather than working solely for the central administration of the University. The organisation of HEROBC activities varies in each university (see Chapter 7, p. 248-51; Appendix 7.3).

By making departments pay the money, it is made sure that HEROBC fund works, supported by the departments. The nature of the funding for the post requires answering to multiple people: departmental boss and RSBD (*then, now Research and Enterprise Services*) - Assistant Director (Business Development). The nature of the two roles doesn't always match, but so far they don't conflict with each other [Outreach Fellow, based on notes from interview August 2001].

Outreach Fellows as well as the Deputy Director of Research and Enterprise Services, who oversees the University's overall research support activities emphasise the importance of the interdisciplinary nature of research in general and of third stream

activities in particular.³⁶ The Fellows work as interdisciplinary catalysts across Schools, but the fact that the Fellows are partly funded by each School may cause a difficulty. The School does not necessarily encourage interdisciplinary collaboration, due to the priorities of each School and may not necessarily see the benefits of outreach activities [interview, December 2001].

One Fellow mentioned:

I am probably the most ‘School hopping’ person among the Fellows...I completely ignore who pays me. ...Opportunity lies in interdisciplinarity. If they solely allow me to work within my discipline, I will lose all opportunities. We add value to the whole of the University, and the University has to consider how they pay us [based on notes from interview November 2002].

The Fellows are facing difficulties such as “balancing different time-scales” and “negotiation of different cultures” [interviews August, December 2001]. Stresses also come from the pressure arising from the research rating in the last Research Assessment Exercise (RAE). One of the Fellows mentioned the pressure in the School to produce more academic papers and enhance fundamental research in order to get more funding through research councils, which makes promoting third stream activities difficult [interview November 2002]. There is a dilemma in reconciling different time scales and different priorities of two or even three cultures, which comprise the triple helix links of university-industry-government relationships.

The pot of money [for university research] is getting smaller, and to maintain and sustain research, industry money is needed, which is what the Outreach Fellow is for [based on notes from interview August 2001].

University has to cope with ‘industrial time scale’; is forced to react to market forces. Time and money are constraints and pressures [based on notes from interview December 2001].

³⁶ There are more funding opportunities than before for interdisciplinary research from research councils [interview, Deputy Director (Research), October 2002].

It is not only about reconciling the dichotomy of the interests of industry's short-term money, and government's research money which is 'long term'.

Governments' initiatives are based on the logic that the wealth of the country derives from the applied research for industry; however, long-term benefits from fundamental research might be sacrificed [based on notes from interview August 2001].

What is required of Outreach Fellows is to balance the interests of the department and industry needs. One of the Fellows sees outreach activities as integrating different needs.

It isn't good just to use the money for applied research for industry needs without considering the interests of the department. Developing academics' interests in industry and determining the interests of academics and industry and matching them...it is a role as a facilitator [Outreach Fellow, based on notes from interview August 2001].

Thus, the role of Outreach Fellows encompasses persuading industry to provide part-funding such as PhD studentships and research fellowships. The University won two Faraday Partnerships ³⁷ in 2002. This is a prestigious national programme of an interdisciplinary nature, promoting interactions between academic institutions, businesses and other agencies. Outreach Fellows were substantially involved in the application process.

The Fellows need to justify their existence by meeting their targets and, in order to do that, they have to target large opportunities. Interviews with Outreach Fellows confirmed the difficulty for the University in working with local SMEs without public financial assistance.

Regional projects are like a 'donation' done as an ethical responsibility of the University. They are not getting back to the School [financially]. Funding comes from global market, large companies.... There are interactions with local SMEs through students' industrial placements, but the salary for an IT graduate is high which SMEs cannot afford. The different geographical scales supplement each other [Outreach Fellow, based on notes from interview, September 2001].

³⁷ These are Mini-Waste and, Rapid Manufacturing through Powder Processes.

The target over 2 years is £1.3 million research funding from local companies. But this is not feasible. There is no potential solely from local companies. Have to target nationally and internationally to meet the target [Outreach Fellow, based on notes from interview, December 2001].

The programme is evaluated by HEFCE against published targets currently being developed by HEFCE through consultation with the HEI sector. These targets, translated to the specifics of the individual institutions' HEROBC programmes, are expected to include indices such:

- The number of new patents filed;
- Growth in the numbers of short courses and students;
- Commercial growth in the University's Schools of Study (PATHWAYS for the purpose of UBOP)

as well as qualitative judgements on impact from market surveys.

To monitor and evaluate the work of UBOP and ensure HEFCE's requirements are met, an external evaluation panel has been established. This reports to Professor Michael Clarke, the Pro-Vice-Chancellor (now Vice-Principal) responsible for external affairs (see *The Bulletin* 17 January 2000 No. 766). An internal Advisory Group provides advice and support to this process.³⁸

As part of the new strategy of 'Enterprising Birmingham', a new Teaching Company Scheme (TCS; now renamed as Knowledge Transfer Partnerships; see also p.124) manager was appointed as part of the Outreach to Business Team based at Research and Enterprise Services along with other HEROBC Outreach Fellows. Before, Birmingham, Aston and UCE used to have a TCS Centre located within Aston Science Park where there was a manager who co-ordinated TCS activities for the three universities. The University of Birmingham, although it has always had TCS schemes

³⁸ <http://www.bham.ac.uk/RSBD/HEROBaC/homepage.htm> access date 30/09/03.

since their inception in 1975, had not been doing very well.³⁹ The TCS manager for the University of Birmingham was appointed in March 2002 to promote the growth of the scheme at a time when the University is looking for significant expansion in this area.

The appointment of a Regional Industrial Collaboration Manager in 2002 funded by AWM as part of the Innovation Team has particularly contributed to the developing relationship of regional HEIs in general and AWM. As the Manager sits in the University of Birmingham and works as part of the Business Outreach team, the link with the University and AWM has been strengthened. The Deputy Director of Research and Enterprise Services (Research) sits on the RIS Operational Group, and oversees European Structural Funds. One of the big achievements in terms of the links with the Region, the School of Computer Science has recently won a Centre for Excellence in ICT with funding from RDA.⁴⁰

6. Widening Access and Regionality

Another national higher education policy agenda which is linked to the regional dimension of the University is government's widening student access initiative. As already mentioned in Chapter 4 (p.120), the government has pledged to extend the participation of all 18 to 30 years-olds in higher education to 50 % by 2010. It argues that the drive is vital if Britain is to create the kind of workforce needed in tomorrow's world, where a premium will be put on 'knowledge'. As a result, universities across the

³⁹ One of the professors who has had a number of TCS experiences at different universities commented that the University of Birmingham was not particularly encouraging academic staff to do TCS and that the government financial support was not provided to the department but to the University, which was not an incentive for academics. The professor also commented on the lack of co-ordination of TCS as a university [interview, January 2002].

⁴⁰ The School of Computer Science sets up the "Centre of Excellence for Research in Computational Intelligence and Applications" (CERCIA), with substantial funding (circa £2.6 million) from AWM and support from several leading companies, such as BTexact Technologies, Honda Research Institute (Europe), Rolls Royce, Qinetiq, HP Labs, ProEnviro, Severn Trent Water, STMicroelectronics, Thales, etc. The focus of the Centre is applied research and exploitation of computational intelligence (CI) technologies, which not only have increasingly become an indispensable part of key technologies in ICT, but also extend their applicability to a wide range of fields, e.g., engineering, telecommunications, finance,

region are setting up their own ‘widening access’ programmes with some financial incentives from HEFCE. For the University of Birmingham, too, this is one of the factors which promotes its regional (re-) turn. In 2000, the then Vice-Chancellor put it this way:

We accept readily the need to increase access to the University and to increase participation by groups who are at present under-represented in higher education. We have already started on this and our alliance with Westhill College is an important part of that process. It will inevitably mean that we have many more students from our home region and from many different backgrounds and age groups. In a sense we are revisiting the roots of the University which was the fulfilment of the ambition of local people who wanted a university for local students.⁴¹

The University has entered into a strategic alliance with Westhill College of Higher Education and Selly Oak College to promote the agenda of widening access to higher education set out in the Dearing Report. The Widening Participation Unit was set up in November 1999 with the money from HEFCE. Widening Participation activities already existed through the School of Continuing and Professional Education, admission liaison, and each School⁴² but the Widening Participation Unit was set up specifically to respond to the government’s initiatives.⁴³

economics, biology, medicine, transportation, environmental science, social sciences, etc.

<http://www.cs.bham.ac.uk/news/> 12/09/03.

⁴¹ ‘Celebrations and Expectations’

http://www.publications.bham.ac.uk/birmingham_magazine/b_magazine1996-99/b99_3.htm access date 26/02/03.

⁴² The School of Public Policy builds on its relationship with Castle Vale HAT, and runs a course “Regenerating Urban Communities” for University undergraduates, the residents at Castle Vale, and the staff at Castle Vale HAT. It provides modules and part of the aim is to ‘de-mistify the University to the residents. The course fits in well with the widening participation agenda of the University, and it is partly funded by the School of Public Policy, and partly supported by Widening Participation Unit [based on notes from interviews November 2002].

⁴³ It was recognised by the University that the social base of the recruitment of students to the University was ‘narrow’:

There are three indications:

- Social Classes: Birmingham has 72 % of students from social classes 1 & 2;
- Proportion of independent/state sector : 26% of Birmingham students are from independent schools, which consist of 7% of the whole school population;
- Proportion from some area identified nationally as “low participation neighbourhoods”.

Based on these indicators a benchmark for universities was published in 1997/8. It is a kind of target for universities. Based on the recognition of “uneven performance”, Widening Participation is about trying to

The Widening Participation Manager says:

The University finds it is in its interest to be more attractive to local as well as keeping its national and international profile. As far as the recruitment was concerned, the focus of the university was national. Now the focus is local as well as national [Widening Participation Manager, based on notes from interview August 2001].

The Manager sees links between the local recruitment of students and other issues such as devolution processes including the agenda of regional ‘governance’ and the issue of how to strengthen the University’s links with regional employees. Also, there is an increasing emphasis on the issue of technology transfer to industry in the Region as the business of the University.

With these issues, the University sees itself as a significant regional player. Now the Region and the University have found mutual benefits. To have a ‘higher regional profile’ it must have more regional friendly recruitment. As part of the tuning into the Region, the University has to consolidate and create good relations with others in the Region such as other universities, schools and colleges [Widening Participation Manager, based on notes from interview August 2001].

In order to promote the scheme, Access to Birmingham, a Framework for Partnership has been developed as an organisational strategy.⁴⁴

Some other HEIs, notably post-1992 universities in the Region, have a long tradition of ‘widening access’ to the different groups of the community. There are

“increase the numbers coming from groups who have been under-represented”. Patterns of recruitment to the University differ regionally and nationally:
e.g. nationally 6or7/10 from social class 1-2; locally 5/10 from lower social grounds. The constitution of students is changing because of the changing funding patterns. Firstly, as a general trend, with the introduction of student fees, more students are staying local. Secondly, there are government incentives to recruit locally to meet the national Widening Participation target.

⁴⁴ “The University of Birmingham has, in its Learning and Teaching Strategy, committed itself to widening participation. We will, for example, be talking to schools and colleges in the region about our *Access to Birmingham* scheme that offers support to applicants from groups who are currently under-represented at the University. It is in pursuit of this that the University recognises and welcomes the need to work in partnership with schools and colleges to facilitate access and appropriate routes for progression” <http://www.ao.bham.ac.uk/aps/widpart/framework.htm>
access date 24/08/01.

different models of widening access operating within the Region, which sometimes may lead to competition between HEIs (see Chapter 7, p. 259).

The Region has been the focus of the University's activities from various perspectives. Different strands of government initiatives such as outreach to businesses and widening student participation at the time of devolution highlighted the importance of the Region as a strategic organisational field for universities, and the University of Birmingham has found its own interest and potential opportunities in playing a bigger role in this field. This is the organisational (re)turn to the Region.

6-3 MANAGING A LEARNING UNIVERSITY IN A MULTIPLE-SPATIAL ECONOMY

Structure, Agency and Strategic Actions in Time and Space

The University has been evolving throughout its history as part of wider political and economic structures, interacting with more agency oriented factors within the specific institutional contexts.

The recent central government's policy to promote university-business interactions through a number of national initiatives to encourage third stream activities has influenced the University's organisational structure, and individual actors as agents have played significant roles in that process. The current Vice-Chancellor played a significant catalyst role in terms of forming a new strategy of 'Enterprising Birmingham' as part of the wider *Strategic Plan 2002-2007*. The former Vice-Chancellor, through his link with the RIS programme in the Region, played a significant role in connecting the University to regional partners within the current landscape of devolution and regionalisation of the knowledge economy (see Chapters 5 and 6).

The recent organisational changes at the University, the appointment of HEROBC Outreach Fellows in Schools and MEDICI Fellows (see above p.204) funded

by HEIF in medical and biosciences fields, further promoted the direction of ‘enterprising’ the University activities, and ‘regionalising’ some of the university expertise. As this Chapter has made clear, the University has been shaping its strategic actions within the Region, which is (re-) emerging for the University as a strategic selective context. These new activities have to be examined in relation to the wider picture in the institutional processes unfolding in the Region (see Chapter 7).

The third stream activities provide new strategically selective contexts for the University, where it can take strategic actions. It is the combination of “two sources”- the *income generation track* from business and the *public funding track* from the government that makes possible the regional outreach activities of the University along with those of other partners. It is described by a senior manager of the University as a “virtuous circle”. For example, TCS, as the government funded knowledge transfer scheme through a student placement, provides the University with the means to work with firms, principally with SMEs. This allows further collaboration with industry through consultancy and Continuing Professional Development (CPD), where the University wants to lay on courses for those working. These are seen as an increasingly important part of the University’s portfolio [based on notes from interview January 2003]. Outreach Fellows, funded by public money, go out to communities to find businesses to work with the University.

The Region, which is a geographical administrative unit, where increasingly institutional partnerships and networks are created, now functions as a strategically selective *space* where the University (re-) positions itself as a knowledge creator as well as a knowledge mediator. The University of Birmingham, with its roots in the City of Birmingham and in the West Midlands Region, is redefining its role as a regional player

whilst also playing its role as a national university with a research capability of international quality.

There are a number of structural factors at work which influence the University's behaviour with regard to its third stream activities. The central government's White Paper, *The Future of Higher Education*, published in January 2003 which emphasises knowledge transfer and widening access, the Lambert Review on university-industry links commissioned by the government and the consultation on HEIF 2 (see Chapter 4 p.131-3), all pushed the University to position itself strategically in relation to the resources available at different geographical scales to mobilise further opportunities.

Managing a Learning University in the Global-Regional Knowledge Economies

The organisational structure of the University has been changing in response to the structural factors which influence the environment in which the University operates.

The new Plan encourages the university to work more as 'corporate' rather than 'central'. We do things within corporate policy. We are trying to be more corporate [a senior manager, based on notes from interview January 2003].

The University adopted the model of having a small number of Schools, which is followed by other old universities such as Newcastle and Edinburgh. The University has reorganised its structure and now has three Deans (Arts and Social Sciences; Life and Health Sciences; Physical Sciences and Engineering) and 20 Schools instead of a faculty system whereby Heads of Schools function as the most important interface. This is to make critical mass, academic coherence, and management capacity.

In the light of the growing significance of third stream activities, each university including Birmingham has met a challenge in how it should build that activity into its existing structure internally and evolutionally.

We have to change management structure to allow that activity to happen [Outreach fellow, based on notes from interview November 2002].

As already mentioned (see above p.205) the Research Sub-Committee of the Strategy, Planning and Resources Committee was established on 1 August 2002 in accordance with the *University's Plan 2002-07*. The creation of the new Enterprise Board in 2003 is yet another further step to achieving the goal of 'Enterprising Birmingham'.

Under a number of third stream funds (e.g. HEROBC, HEIF), new posts have been created within the University. One of the issues is how the University finances these posts. At a personal level, the challenge for Fellows lies in how to build a career path within the existing structure of the University. The University, in turn, needs a specific strategy to motivate these Fellows. There needs to be a system of promoting these Fellows to senior positions, and accepting new people to whom they can pass on the links which have already been created.

The Fellows, funded by the new funding stream introduced by the government, act as agents of change within the structure of the University which was not primarily structured to work with industry or the Region. The University implements the new *Strategic Plan* and 'Enterprising Birmingham' strategy enhancing external links internationally, nationally and regionally. Now it needs to manage the new enterprising activities as an integrated part of the whole university strategy and adapt its organisational processes and structure accordingly.

The concept of the 'learning organisation' flourished in the literature of management and organisational behaviour in the early 1990s. Within the process of 'learning', there remains a question of "how knowledge is understood, accessed, and used by organizations as well as individuals which they comprise"(Duke, 2002:38).

Within what arrangements, regimes and forms of management does the creation of knowledge allow the organization to obtain, analyse and use information at different levels (double and triple as well as single loop learning) to sustain purposes and directions in changing circumstances? (Duke, 2002:39)

The rising concept, the Learning University, has to be matched with the solid evidence of the University's performance, in terms of its core business, namely, teaching and research, and its external relations, which is described by this umbrella notion of 'the third stream activities'. The central concern of this chapter, and the thesis as a whole, is about the institutional processes of the third stream activities promoted by higher education policy under the UK New Labour Government in relation to regionalisation of the knowledge economy, which is again, being promoted by central government. Yet, an institutional response needs to be analysed within the framework of the MLG structure of knowledge production, which includes international, European, national and sub-national linkages and opportunities as perceived by institutional actors.

CONCLUSION

This chapter has provided an account of the institutional processes of transformation of a university. Based on the strategic relational approach as the theoretical framework developed in Chapter 2, this chapter identified structural as well as agency factors which influence a university as an institutional actor.

The chapter has focused on the University of Birmingham as a case study. By providing the history of the institution set against its hinterland, the chapter managed to illustrate the dialectic relationship between the University and the Region. Set up originally as a regional university, the University has expanded and changed its relationships with its region. Although the institution always kept its root in its locality, the University has developed as a national research university and as an international research university.

The current ‘enterprising’ strategy and ‘regionalisation’ of the UK higher education policy has affected the University of Birmingham. Under HEROBC and HEIF funding, new posts have been created in expectation of functioning as ‘boundary spinners’ within their School/discipline, between different Schools/disciplines within the University, and between industry and the University. These functions have yet to be fully integrated into the organisational mechanism/culture of the University.

The University has repositioned itself in relation to other regional partners through the RIS, supported by the EU funding. It is through the combination of these ‘strategically selective contexts’ at different geographical scales that the University has responded and articulated its strategic actions with regard to relationships with other actors and each financial opportunity.

The region, as defined by an administrative boundary, is increasingly recognised as a strategic *space* where institutional partnerships and networks are being developed. Regional collaboration has been encouraged by central government policy, but whether or not this is going to happen depends on how each institution identifies its markets and strengths, and how it perceives opportunities in relation to government initiatives. The University through its individual actors sees opportunities and decides whether or not it goes for an individual strategy or a more collective strategy. Whilst the regional one is more emphasised than before, it is still only one of the options for the University of Birmingham. The next chapter goes on to illustrate the regional institutional processes of collaboration between universities and between universities and other regional partners as they are unfolding in the West Midlands Region.

Chapter 7

Universities and the Formation of Innovation Networks in the West Midlands Region

INTRODUCTION

Each region provides a different environment within which the interactions between the fields of higher education and regional development have taken place. This chapter looks at the evolution of regional innovation systems and the higher education systems in one region in England, namely the West Midlands. In doing so, the following key questions are asked:

- In what ways has the Region emerged as an organisational field for the universities to play a role in?;
- What are the opportunities and constraints which universities in the Region perceive in relation to collaboration with other universities in the Region?;
- In what ways have markets, governance structures and networks of universities been changing in the West Midlands in response to the regionalisation of higher education policies occurring in the UK?;
- In what ways can the networks developed between universities and higher educational institutions in the Region be managed and fed into regional innovation systems?

This chapter focuses on the regional institutionalisation processes involving the market, governance and networks of universities with the focus on the West Midlands Region. Every region is a historical construction with interaction of structural factors and agency factors. The ‘construction’ of regions is affected by the representation of particular sectors and, the tendency to interaction of firms with other firms, local

authorities, education institutions, research institutions and other agents. The West Midlands Region of England is experiencing the transformation from a manufacturing-based economy into the knowledge-based economy and the chapter highlights the ways in which universities in the Region have become important actors in regional development. A series of mechanisms and processes are articulated that explain the conditions and pre-conditions of universities in the Region in playing a role in the knowledge economy in the context of regional development.

Firstly, the chapter provides an account of the main structural conditions of the Region. In order to understand the current regional institutionalisation processes, it is important to capture the earlier historical development (see Appendix 7.1).¹ The focus in this chapter is two-fold: one focus is on the transformation of the regional economy; the other is on the development of the regional governance structure. The system of governance in the Region has developed through time: the transformation of administrative boundaries, and the emergence of the new regional governance structure in the late twentieth century as the specific context of the Region is outlined below (for the national picture, see Chapter 5). The development of the Regional Innovation Strategy (RIS) in the Region, and the new Regional Economic Strategy (RES) developed by the Regional Development Agency, Advantage West Midlands (AWM), from 1999 are discussed in detail in relation to the role to be played by higher education in the Region.

Secondly, the more detailed processual analysis of the institutional actors and their interaction is given so that the structural and agency factors behind the regional collaboration mechanisms involving universities can be examined. This is done by

¹ The historical background such as the industrial foundation of the Region, its economic transformation throughout the 1970s and 1980s, the regional implementation of European programmes, and the new

giving a detailed analysis of the market for higher education in the Region and of the organisational transformation which have been made in response to the new opportunities provided by the government incentives (discussed in Chapter 4).

Thirdly, the mechanism of collaborative networks between universities in the Region is examined. It is shown that, in the West Midlands Region, higher education institutions including universities were rather late comers as institutional actors in the regional governance mechanism. It is demonstrated here that the historical institutional collaboration patterns and the combination of different spatial governance structures make the West Midlands regional networking processes diverse. The dynamics of the interactions of institutional actors in the West Midlands leading to the emergence of regional systems of innovation are also depicted below towards the end of the chapter.

7-1 THE MAKING OF THE REGION

The Regional Economy

The West Midlands² is a region with a population of about 5.3 million people or about 9 per cent of the UK. The Gross Domestic Product of the West Midlands is just under £57 billion per annum, 8.4 per cent of UK GDP (Universities UK/HEFCE, 2001 b: 10). The Region has been at the centre of the British metal and engineering industry since the beginning of the Industrial Revolution. The regional economy is still dominated by one of the largest concentrations of manufacturing industry and employment in the country. Manufacturing industry is responsible for a quarter of employment (22.3 per cent) and 27.5 per cent of GDP, the highest proportion for any region in the UK in 1999 (Smith and Collinge, 2000:115).

agendas for regional development in the late 1990s are provided in Appendix 7.1 .For historical accounts, see also Beesley, 1955, 1957; Taylor 1976; Spencer et al., 1986.

² The region consists of five shire counties (Worcestershire, Warwickshire, Staffordshire, Shropshire and Herefordshire) and seven metropolitan boroughs (Birmingham, Coventry, Solihull, Sandwell,

As a result the regional economy has suffered disproportionately from the decline of UK manufacturing over the past two decades. At present, both the West Midlands' GDP per capita and disposable household income levels are below the English average, a situation which has persisted over the last decade and earlier. With its continuing reliance on manufacturing industry, the Region's economy has more in common with the economies of the north of England than those of the south (Universities UK/HEFCE, 2001b: 10). Research and development (R&D) expenditure by industry in the Region has long lagged behind that of the UK (Bentley et al., 1998:8). Despite the presence of research institutions, linkages between business and higher education are said not to be strong (Bentley et. al, 1998:35). Within the West Midlands there are thirteen higher education institutions (HEIs), eight of which are universities. There are also seven major research and technology organisations (RTOs).

The performance of the West Midlands economy started to fail in the mid 1960s. However, the West Midlands' recent economic problems need to be viewed in the context of the long-term changes in the economy and industry. Marshall and Mawson (1987:96-7) give a broad picture of the changing regional economy over the last two hundreds years. In the past, the prosperity of the region relied upon the adaptability of its industrial structure, in terms of both the local business community and the workforce that were able to adjust to changing national as well as international economic circumstances. Appendix 7.1 gives an historical account of the making of the West Midlands regional economy in relation to international and national markets including the recent trends of foreign inward investment. As Bentley argues, such developments must be seen in the context of the restructuring of each industry such as automotive in Europe and worldwide, and there is a need to base policy on a proper understanding of

Wolverhampton, Dudley and Walsall which from 1974 to 1986 formed the West Midlands County)

business change (Bentley, 2000:125, 133).³ In general, it remains crucial for manufacturing industry to invest in the technology that will keep its products competitive and to remain innovative. This may be better achieved through partnership with universities and research institutes or other local agencies promoting development of technology and skills (see Chapter 6 on the development of A38 Corridor, p.196).

Since 1984, Birmingham and other parts of the Region have benefited from EU regional assistance (see Chapter 5 p.155). There are Objective 2 areas and Objective 3 areas in the Region which are eligible for European Structural Funds. The future prospects of the Region are likely to be affected by several changes in the policy environment. In July 1998, the government announced a major review of assisted area status, which determines where regional selective assistance and other industrial aids are available across the country. This review was part of a Europe-wide reassessment as part of the enlargement of the EU, which has resulted in a reduction in UK areas eligible for assistance. At present, transitional relief for 2000 to 2006 is available to the old EU Objective 2 areas, which are eligible for Structural Funds (Smith and Collinge, 2000:122).

There are wide variations within the Region in terms of local economic performance. Apart from automotive and metal manufacturing, decline has particularly affected the agricultural and mining areas, the pottery and steel industries of North Staffordshire and the carpet industry in Kidderminster.⁴ On the other hand, much of the

(Dahlstrom, 1999:4).

³ In, March 2000, as a consequence of Rover crisis, Rover Task Force (RTF) was created to look at the consequences for smaller firms and also, the consequences for the long term economic condition of the Region was looked at. The idea of A38 Corridor and sub-regional partnerships developed out of this. See Chapter 6, p.196, 204.

⁴ There are concentrations of poverty and unemployment in the metropolitan area, parts of North Staffordshire, and in North Warwickshire and Herefordshire. Regional unemployment declined from 7.2 per cent in 1996 to 3.8 per cent in 2001 but in inner parts of conurbation has remained close to 20 per cent with a high proportion of long-term unemployed. In contrast, unemployment rates in places like Leek and Evesham, to mention but two, have been consistently below 2 percent, with Coventry-Warwick-Solihull

growth in business services, business tourism and shopping has occurred in the regional centre, Birmingham.⁵ The City of Birmingham has, indeed, been transformed through the 1980s and 1990s and into the new century. Following the collapse of the city's manufacturing industry, the City Council has been trying to diversify the industrial base by developing new, high value, high growth activities such as telecommunications, pharmaceuticals, and computer software/hardware services as well as improving the performance of existing sectors (*Economic Development Programme 1997/1998, Birmingham City Council*).⁶ As Bryson et al. argue, the future will depend on how well Birmingham positions itself "relative to external influences on its economic restructuring" (Bryson et. al, 1996:164).⁷

Regional Governance

As Chapter 5 showed, since the mid-1990s, the institutional contexts of regions have been subject to profound changes as the government's reform agenda for the English regions has begun to take effect. However, the historical institutional background of

forming an especially buoyant area based around Warwick University Science Park, Birmingham Airport, the National Exhibition Centre, and the M40/42.

⁵ A succession of major regeneration projects have included the International Convention Centre, and Brindleyplace and the Mailbox. However, within walking distance are some of the most deprived wards in the country containing, amongst others, a concentration of disadvantaged ethnic minority communities (Ayres et al., 2002). Development has now turned to the 'Eastside' of the city, with Millennium Point, the new Bull Ring Shopping Centre and the Digbeth area reaching round to Aston Science Park and Aston University.

⁶ Economic Development Programme 1997/1998, Birmingham City Council cited from City template Birmingham; <http://www.unesco.org/most/p97city.htm>. Now over 400,000 people work in Birmingham— nearly 100,000 of them in the 'knowledge economy' according to new BEIC (Birmingham Economic Information Centre) research. In Birmingham, education is by far the largest sector in the knowledge economy, followed by public services, regulation and research. The legal and accounting professions are also important contributors (*Birmingham Voice*, 2000).

⁷ Birmingham has committed itself to a 'place-marketing' campaign such as 'Birmingham: meeting place of Europe'. Birmingham benefited over the last decade from an extensive programme of city centre development and urban renewal with some funding from the European Union. In 1992, the city hosted a European Union summit meeting, and, in 1998, the G8 summit. Despite an 'enduring (and increasingly unfair) reputation as one of the ugliest places in Britain', Birmingham is now the third most visited city after London and Edinburgh (*The Economist*, 1998). Birmingham and Solihull have attracted investment in information and communication technologies (ICT) industries (Collinge and Srbljanin, 2002). Recent major inward investments in the Region include the creation of 1,000 jobs by Oracle, the US software company in its new software development unit in Solihull, and the decision of Cap Gemini, the computer service company, to increase employment in its offices in Aston, Gravelly Hill and Redditch.

each region is also important. Ayres et al (2002:63) argue that the history of post-war collaboration between authorities in the West Midlands is distinct from that in many other English regions. According to them (Ayres et al., 2002:65), the tradition of regional institution building, notably in the form of regional planning structures, can be traced back to at least 1945. The West Midlands is the only region, apart from the South East, that can claim a strong unbroken tradition of strategic planning associations since the 1960s, which are regional rather than merely metropolitan or city-regional (Thomas, 1999).⁸

In the early 1990s regional strategic planning took a step forward with the establishment of the West Midlands Regional Economic Consortium (WMREC), comprising representatives of the Training and Enterprise Councils (TECs), business community, trade unions and local government, each of which recognised the need for a single cohesive voice for the Region in promoting its economic interests at national and European levels. Through its activities, WMREC developed a close working relationship with the Government Office for the West Midlands (GOWM) after the latter was established in 1994 to coordinate central government activities in the Region concerned with the environment, transport, employment and industry.⁹ The GOWM also played a key role in fostering the development of various regional and sub-regional partnerships and the management of the new regionally based programmes, in particular the Single Regeneration Budget (SRB) and the EU Structural Funds. In recognition of

⁸ In 1966, the West Midlands Planning Authorities Conference was established to oversee the preparation of a regional land use strategy starting in the autumn of 1968 (Stokes, 2000:76). Recognition of the growing importance of regional planning issues led to the establishment of the West Midlands Forum of County Councils which provided an organisational framework between the conurbation and shire authorities including both the Strategic Planning Guidance (SPG) in 1987 and Regional Planning Guidance (RPG). The Forum also took the lead in preparing the first European Strategy for the Region in 1993, signalling the capacity of West Midlands local authorities to collaborate in this emerging policy area (Ayres, et al. 2002:66).

⁹ The Regional Director was charged with oversight of these programmes, providing a single clear voice for central government and its policies in the Region and articulating regional interests in Whitehall.

the growing importance of European funding, the West Midlands Forum of County Councils and WMREC established an office in Brussels in 1996 to promote the interests of the Region (Ayres, et al., 2002: 66).

Since 1997, there have been significant changes in the formal arrangements for the governance of the West Midlands: a strengthened GOWM, the creation of an RDA called Advantage West Midlands (AWM), and the establishment of a West Midlands Regional Chamber (WMRC). These were accompanied by the creation of a regional office of the West Midland Local Government Association (WMLGA); and agreement –in the form of a regional concordat- between GOWM, AWM, the Regional Chamber and WMLGA; and the creation of a West Midlands in Europe partnership.¹⁰

Towards Regional Innovation Networks

Preparation of *the West Midlands Regional Innovation Strategy* project (WMRIS), supported by European funding (see Chapter 5), was commenced in September 1996. The University of Birmingham was drawn in at the beginning of the RIS process. Prior to the formation of RIS, then the European Officer of the University, had sat on the “Programme Monitoring Committee for ERDF”. Other participants included local authorities, universities, volunteer sectors and the development agency, AWM.

Lots of proposals were coming for funding, all of which claimed that they would bring about change and innovation, but not talking to each other. There was indeed no mechanism for them to talk to each other, and no strategy to follow, no rule book nor plan. So there was no real way of judging them. Hence, there was a need to have some sort of framework. It was agreed to plan and to develop a strategy [based on notes from interview November 2001].

¹⁰ West Midlands in Europe partners represent a whole range of regional interests. AWM and WMLGA are responsible for the overall direction of the Brussels Office. Senior Members represent major regional or sectoral groups, such as the HE sector or the region's Chambers of Commerce. Individual membership is for a wide range of regional interests who wish to take part in West Midlands in Europe at an individual or sub-regional level. Sectors represented include Business, Culture and Arts, Further Education and Voluntary and Community.

Together with the European Officer at one of the local authorities and the chair of the Regional Officers Group, the University European Officer started contacting the relevant people. Up until then there was no 'regional agreement' encompassing the Region. Local initiatives existed at sub-regional scale and, under Structural Funds, these initiatives were duplicated in different parts of the Region.¹¹

In 1998, the document was published setting out the strategies and key policy priorities for innovation in the West Midlands Region over the next 5 years. The aim of the WMRIS is to improve living standards by promoting innovation and strengthening the economic base of the region.¹² It is argued that investment in innovation must become a priority for West Midlands business if the Region is to improve its competitive position. Four targets are set out in the strategy.

- To increase the proportion of innovating firms from the current figure of 60 per cent to 90 per cent by 2004 by focusing in particular on the ability to increase innovative activity within firms through stimulating networking amongst business and organisations across the Region;
- To increase investment in R&D, fixed capital equipment and education and training to, at least, the UK average by 2004;
- To increase the proportion of firms who engage in joint innovation activity from 50 per cent to 90 per cent by 2004, and the proportion who make joint investments in innovation activity from 22 per cent to 50 per cent;
- To spread best practice and close the productivity gap. That is, to increase productivity in the West Midlands to, at least, UK average by 2004.

¹¹ "As a nature, innovation issues and environmental issues are broader in scope. You cannot just look at Birmingham, Coventry, and Stoke etc. The issues are not restricted to each sub-regional unit. It has to be broader in scope" [based on notes from interview November 2001].

¹² The *West Midlands Regional Innovation Survey of Business* found that only 60 per cent of firms stated that they had introduced a new product in the period 1994-96 and only 66 per cent of respondents stated that they expected to innovate in the next 12 months. Many firms (30 per cent) made no investment in research and development and only 25 per cent of respondents invested more than 5 per cent of their

WMRIS was developed by a broad partnership of public and private sector organisations representing the WMLGA, GOWM, the Region's universities, science parks and higher education institutions, the European Business Innovation Centre, the Midlands Innovation Relay Centre, the Engineering Employers Federation, TECs, (now the Learning and Skills Councils (LSCs)), Business Links, CBI, TUC, Chambers of Commerce and Industry, West Midlands Enterprise, private sector research organisations and individual firms.

Phase 1 of the WMRIS was characterised by the formation of a two-layered structure composed of the Operational Group and the Steering Group which brought together key players within the Region. The University of Birmingham was substantially involved in the initial phase of the RIS, with the former Vice-Chancellor being the Chair of the WMRIS Steering Group (see Chapter 6, p.199). During the RIS process, it was seen as really important for universities to get involved in it. As a consequence of RIS, lots of contacts between university people and local authority people were made. It allowed for a dialogue - local authorities benefited from expertise from universities, and academics benefited from working with the real world¹³ [based on notes from interview November 2001].

As Chapter 6 shows, for the University of Birmingham, the RIS was an important first step for the University as an institution to engage in the current regional agenda. It was “the first significant involvement of the University into the current regional agenda”, according to one interviewee. A research team from the University of Birmingham was represented on these two groups and worked in an interactive way with the members. Phases 2 and 3 of WMRIS were conducted by the research team in

turnover in innovation related activities such as product and process innovation, design, patents, market research and training (*WMRIS*, 1998:4).

conjunction with members of the Operational and Steering Groups. The establishment of an effective institutional process is said to have laid the foundation for the successful completion of subsequent phases of the WMRIS (Landabaso et al., 1999: 27).

The WMRIS is built on four inter-related elements that provide the cornerstones of a framework designed to catalyse innovation. The cornerstones of the *Strategy* are identified as follows:

- Exploiting and improving regional capability via the constant review and evaluation of sectors, research and technology;
- Catalysing collaborative innovation activity via business networks and networking between the science base and industry;
- Increasing investment in research, development and design; new capital equipment and skills and training;
- Enhancing innovation culture and spreading best practice to ensure the widest adoption of generic technologies.

Thomas (2000:193-4) argues that the WMRIS engages directly with what Cooke and Morgan (1993) termed the “network paradigm”. The practical assistance to enable the sector-based networks of SMEs to adopt new technologies is to be delivered mainly through three technology centres modelled on the German Steinbeis transfer centres (WMRIS, 1998:7).¹⁴ These would link together sectoral research centres in the Region with companies to promote collaborative innovation activity. The job of building and maintaining collaborative SME networks and linking them with innovation sources, such as universities and other research centres, would be given to “network brokers -

¹³ For example, the economic development department of Birmingham City Council benefited from working with the University.

¹⁴ The German Steinbeis Foundation is a network of more than 250 Steinbeis Transfer Centres (STC) hosted by different regional higher education institutions with a co-ordinating headquarters. Within the STCs nearly 600 professors have the opportunity to manage technology transfer projects within a legal entity whilst using the existing research infrastructure. The running costs are covered almost completely by the income generated from technology transfer services to industrial clients, particularly, SMEs (WMRIS, 1998:7).

entrepreneurs and scientists seconded from industry and the science base” (*WMRIS*, 1998:10).

The WMRIS, as well as the Competitiveness White Paper (DTI, 1998), places a heavy emphasis on the commercial exploitation of university research and scientific knowledge. The universities are seen first as key sources of innovations for the Region, and second as a way of encouraging ‘spin-outs’ from the universities. The WMRIS addresses the issue of “knowledge based networks” (1998:12). The third West Midlands priority was to maximise SME take-up of innovation opportunities and to enable SMEs to engage in R&D and design improvements through various collective programmes, signposting services and using graduates as “R&D champions”. The RIS recommended that a region-wide “Knowledge House” be established to act as a focal point for SME R&D requirements (*WMRIS*, 1998:15). A start had already been suggested in the form of the CONTACT project (funded by HEFCE, see below p.261 for details) aimed at increasing business and university collaboration together with better marketing of the Region. Out of 21 action plans, 12 of them refer to universities as the main co-ordinators of activities.

As WMRIS (1998) posits in its foreword, it is “only a starting point” for “improving regional economic performance and enhancing competitiveness”. It summarises the *Strategy* as follows:

The challenge is to create a two-way process in which market needs are monitored, identified and understood whilst at the same time establishing a means of knowing what skills and innovative abilities there are in the region, where they are, and how to access them, and finally to match the supply of innovation services with business needs (*WMRIS*, 1998:27).

The *Strategy* has been adopted and endorsed by the newly established AWM, since it was set up in 1999, and is being implemented by AWM in partnership with all the key

players in the Region. The mechanism for the regional network was set up by WMRIS but, in practice, problems have been pointed out. One of the issues concerns the fact that AWM was charged with creating the strategy with limited time and resources. As one member of the RIS Steering Group put it:

Now RIS has been taken over by AWM as the key cornerstone of its economic strategy. However, AWM is not strong enough in special expertise and has not enough management capabilities. The RIS effect was in its peak a few years ago and now it is running down [based on notes from interview November 2001].

Another factor limiting WMRIS concerns the fact that the regional mechanism of HE collaboration had not been well developed. As is shown below, WMHEA and RIS were set up at the same time, which shows that the HE Association in the Region was quite late and that not much collaboration had been happening before that.

Or, as another person on the Steering Group put it:

RIS was very important as a process. The process of making the RIS was very important and the process indeed influenced the actors. RIS was all about bringing the actors together, bringing planning ethos, encouraging co-operation, creating a rule book to judge projects along the *Strategy* [based on notes from interview November 2001].

It was about bringing together lots of people who were previously working separately. It was an important initiative for the Region. Financially 250,000 ECU was received from the European Commission for WMRIS. However, rather than just a financial impact, it had a significant institutional catalytic effect in the Region.

Towards Regional Advantage

Advantage West Midlands was established in April 1999 with a board of 14 directors, chaired by Alex Stephenson, and the Agency is responsible for establishing regional development priorities with local partners, and bringing to bear AWM's own economic development programmes and budgets. As the development agency for the Region, AWM is charged with developing a Regional Economic Strategy (RES) and then

ensuring its implementation. AWM claims that it is business led and has business people on board, but includes other regional stakeholders drawn from local government, education, trade unions, community and voluntary organisations, environmental groups and the private sector. From 1st April 2002 RDAs receive all funding under the new Single Pot arrangements rather than in separate funding streams from different departments.¹⁵ In 2002/03, with a staff of 190, AWM receives an annual budget of £194 million.

AWM's initial task was to prepare the RES, entitled *Creating Advantage* to meet a tight timetable dictated by central government for all RDAs. The WMRES was first published in October 1999, and the vision underpinning it was expressed as:

...within ten years the West Midlands will be recognised as a premier European location in which to live, work, invest and to visit, regarded internationally as world class and the most successful region in creating wealth to benefit everyone who lives in the area (Advantage West Midlands, 1999:10).

The RES is a ten-year economic development strategy for the Region.¹⁶ The four main pillar of the *Strategy* are:

- Developing a diverse and dynamic business base;
- Promoting a learning and skilful region;
- Creating the conditions for growth; and
- Regenerating communities.

The focus of the WMRES is on achieving “sustainable economic regeneration” which AWM seeks to promote through its role as “regional champion”. The WMRES states as one of its core aims that the Region should strive to create a diverse and dynamic business base, able to cope with shifting market trends, rather than being over reliant on

¹⁵ Before April 2002, the funding came through in separate lots through the DTI, DTLR, DfES and the EU's structural programmes. Its key funding streams were the Single Regeneration Budget, Land and Property Programme, Rural Programme Skills Development Fund and the Regional Innovation Fund (Ayres et al. 2002:67).

one or two dominant industry sectors, and a key mechanism for achieving this is to attract inward investment particularly from firms in the growth sectors. This will help nurture their growth within the Region (AWM, 1999).¹⁷

AWM has identified three new economic development initiatives where the Agency is working in partnership to focus investment and efforts. These are Regeneration Zones, High Technology Corridors and Business Clusters. There are three identified High Technology Corridors in the West Midlands Region.¹⁸ (See Appendix 7.2 for a map). The projects are a mixture of property based proposals and those which aim to improve the interface between universities, research establishments and firms via a partnership. At the moment, however, some of them seem to be more aspirational than a real cluster of local industry. The three corridor partnerships have also identified area for cross-corridor working - particularly on the medical technologies, ICT and transport technologies clusters.

At present the Region's knowledge is often not used to its full potential. Within the Region's universities, higher education institutes, further-education colleges, regional technology organisations (including CERAM, RAPRA, MIRA, DERA) and the European-funded Midlands Innovation Relay Centre, there is a huge amount of knowledge, in terms of leading research and development, new technology and people with world-class skills. This knowledge is often not used to its full potential. The problem is not generating new ideas, but in turning these ideas into commercial business plans (AWM, 1999:24).

¹⁶ In 2003, an updated RES was published which is entitled *Delivering Advantage* (AWM, 2003a).

¹⁷ Since 1991, 680 overseas companies have invested in the region bringing the current total of more than 1,960 from 34 countries including USA, Germany, Japan, France, Taiwan, the Netherlands, Switzerland and Sweden (AWM, 2000). In 1998, the region was the fifth most popular location for inward investment in Europe (DTI, *Invest in the UK*, 2000). The reindustrialisation strategy of inward investment has been adopted in the West Midlands and the region has seen a steady increase in the number of investments made over the last three years though the number is falling now.

¹⁸ The three High Technology Corridors are based in areas of traditional industry. They are the Birmingham to Worcestershire Corridor, the Telford to Wolverhampton Corridor, and the Coventry, Solihull and Warwickshire Corridor. It has been pointed out that only parts of the Corridors overlap with the Regeneration Zones. This is because corridors are largely opportunity based and not defined to reflect social and economic need.

In the autumn of 2000, AWM and the West Midlands Regional Chamber (WMRC) agreed to a consultative process with regional partners which led to the production of *Agenda for Action*, which was completed and approved in the spring of 2001 (AWM and WMRC: 2001). Altogether 60 priority actions were identified with each having a single organisation designated as 'lead partner' with overall strategic responsibility for the action and accountability progress. AWM has a lead role on around a third of the actions, whilst regional partners lead on the others.

Seen as a 'daughter document' of the WMRES, *Framework for Regional Employment and Skills Action* (FRESA) identifies the large gaps in the skills base needed to diversify the regional economy (AWM, 2002, see also Chapter 5, p.177). Partners in all the sub-regions (e.g. LSCs, FE colleges, CONNECTIONs) have come together to prioritise actions, focused on corridor, cluster and regeneration zone needs. It is essential for the overall growth and well being of the Region that the benefits of modernisation and diversification are open to all communities, and that the employment generated by the new high tech industries is available to local communities, not just to labour imported with the new skills.

In September 2002, the Regional Observatory was set up in recognition that there is an increasing need for regional decision makers to have improved access to shared, high quality information on the Region arising from the increasing trend of regional devolution. The aims and objectives of the Observatory are decided by its Partnership Board.¹⁹

¹⁹ The Regional Observatory was initially set up under the parentage of AWM, but it is expected to remain independent from any individual institutional agenda and become an independent body when it is ready. The main work that Regional Observatory has at the moment with AWM is through a *State of the Region Report* which incorporates the main regional strategies, on a number of which AWM is the driving force behind [based on notes from Enquiries Officer, Regional Observatory, July 2003]. Regional Data and Intelligence Network (RDIN) has been created to enhance communication in the Region. <http://www.wmro.org/wmro/servlet/Main?selected=70> access date 02/10/03.

Smith and Collinge (2000:122) argue that there are three critical challenges to be met in the Region which demand sympathetic policymaking and positive action on all the activities involved. These are:

- The up-skilling of the labour force;
- The improved availability of industrial land, both green and brown field; and
- Much more sustained and generous capital investment in infrastructure (especially transport) and in industrial and business assets.

Each of these represents a long evident and often noted failing. It is also important to look at the more ‘soft’ side of policy challenges in terms of institutional collaboration and the formation of ‘institutional thickness’ within the Region. Considering a wide dimension of innovation is important. One of the interviewees pointed out that the notion of innovation has been narrowly implemented in the Region:

The key conclusion of the experience of WMRIS is the importance of ‘networks’. AWM and the government office have taken a sector based cluster approach and high tech corridors have been developed. It is important to note that in RIS, innovation is not necessarily restricted to technology. However, AWM seems to have emphasized innovation as IT and high technology. Innovation could be applied to (regeneration in) declining areas, too [based on notes from interview November 2001].

There should also be a concern about the emergence of the knowledge economy in general and the regional dimension of the knowledge economy in particular. An ability to process and interpret knowledge and information is vital to the innovation activity of firms, together with insuring the availability of workers with the appropriate skills. It has been pointed out that employers in Birmingham (as elsewhere) have found it difficult to recruit employees with good personal and management skills who are comfortable with information technology (Bryson et. al 1996:165).²⁰ Birmingham City Council’s previous chief education officer said “If we are trying to catapult ourselves

²⁰ The Birmingham and Solihull economy has a small but dynamic ICT sector that is at present exhibiting rapid employment growth (Collinge and Srbljanin, 2002) but there is a shortage of skilled labour.

from a manufacturing base into the knowledge economy, then we have to go flat out for higher education”(THESE, April 14, 2000).

These two factors, namely, institutional mechanisms of regional collaboration and the conditions necessary for the knowledge-based economy in the Region, are the most important concerns of this thesis with a particular focus on the institutional role of universities in this. The following section clarifies the main institutional actors that comprise the higher education landscape of the Region.

7-2 THE REGIONAL LANDSCAPE OF HIGHER EDUCATION

Higher Education Markets in the Region

This study is particularly interested in the ways in which universities find their markets and the ways in which they interact with partners in the Region. There are different markets for universities including those for local, national and international students; local, national and wider international businesses; the community and governments and other bodies at local, national, European and international levels. This chapter particularly focuses on the regional markets of HE which have been highlighted by recent UK government third stream initiatives, namely the links with businesses and communities. As Chapter 6 showed in relation to the University of Birmingham, (p. 204), this is the area in which regional collaboration of universities is growing most rapidly in collaboration with the RDA.

In order to grasp the regional markets for HE, it is important to understand the nature of institutions and their general view of markets. There are 13 higher education institutions in the West Midlands Region with total student number of 161,915 (123, 589 FTE; 37% are part-time); and the total HE income amounts to approximately £1,000million (HEFCE 2002a; Davey, 2003). The combined research income of the West Midlands leading research universities exceeds £147m per annum with over 1,850

active research staff in departments which have been assessed by the HEFCE as having attained national RAE 4 or international RAE 5 and 5* excellence in research (Davey, 2003).

The Region is the fifth biggest region and fifth largest provider of HE in England in terms of FTE student numbers. There are eight universities and five other higher educational institutions. Out of eight universities, four are so-called old universities (Aston, Birmingham, Keele and Warwick) and four are new universities (University of Central England, Coventry, Staffordshire and Wolverhampton) which used to have polytechnic status before 1992.²¹ They differ in organisational history, resources and areas of expertise and mission, and in their relationships with the Region. In other words, they tend to have different markets whilst they belong to the same geographical region. To elucidate the different perceptions of the institutional actors with regard to the Region is one of the aims of this section.

²¹ Aston became a College of Advanced Technology in 1956 and a University in 1966 (Smith, 2002:124).

Map 7.2 Universities and HEIs in the West Midlands Region



(from Universities UK/HEFCE, 2001b)

The two tables below summarise the income sources of each institution in the Region and number of students in terms of full time equivalents (FTE).²² The University of Birmingham and the University of Warwick are by far the largest in terms of research and the overall income.

Table 7.1. Income sources of higher education institutions in the West Midlands Region 1998-99 (£000)

	Funding council	Tuition Fees	Research revenues	Other	Total
Aston	17,022	8,917	4,865	10,390	41,194
Birmingham	78,528	42,658	52,306	58,896	232,338
UCE	40,163	17,656	1,427	24,477	83,723
Coventry	39,192	24,364	2,870	16,193	82,619
Keele	18,257	12,404	7,585	15,509	53,755
Staffordshire	36,061	17,634	2,483	7,897	64,075
Warwick	44,218	37,422	25,177	54,436	161,253
Wolverhampton	43,338	23,145	779	17,457	84,719
Newman College	3,561	1,106	73	906	5,646
Harper Adams	6,963	1,737	558	3,170	12,428
Worcester College	8,091	8,551	450	2,053	19,145

(Universities UK/HEFCE, 2001b:14)

Table 7.2. Students (full-time equivalents) at West Midlands higher education institutions in 1999-2000

	Student Numbers
Aston	5,183
Birmingham	19,255
UCE	16,412
Coventry	16,300
Keele	6,265
Staffordshire	13,101
Warwick	11,933
Wolverhampton	16,300
Newman College	1,132
Harper Adams	1,333
Worcester College	3,999
Open University	4,946

(Universities UK/HEFCE, 2001b:13)

In Birmingham, there is a concentration of HEIs (three universities, two HE colleges and the branch of the Open University), whilst in the Black Country, the University of Wolverhampton is the only university.

²² These are listed by alphabetical order, first universities, and then Higher Education Colleges.

Aston University was originally founded in 1895 as a municipal technical college, and became a university in 1966. Aston has an established record of academic excellence in business science and related areas. The University has a very strong portfolio of vocational programmes. Over 70 per cent of students are on ‘sandwich’ and language programmes gaining experience in industry, business and commerce.²³ As a result of these vocation-oriented programmes, the graduate employment rate is consistently very high.²⁴ Aston has a Science Park²⁵ has contributed to the regeneration of the east side of Birmingham. This has been developed as a partnership between the University, Birmingham City Council and Lloyds Bank.

University of Birmingham is the oldest and largest in the Region. Founded as Josiah Mason College in 1875, it was expanded into a university with its charter in 1900. Through an initiative and influence of Joseph Chamberlain, the University was to train and educate the people who would create and manage the businesses and industries of the Midlands. From the start the University taught the major scientific and engineering disciplines and was the first UK university to establish a faculty of commerce. It has a famous medical school. It is a research-intensive university and is a member of the Russell Group of universities. It has the equivalent of a science park in its Research Park (see Chapter 6 for more detail on the University of Birmingham).

²³ 72 per cent of Aston undergraduates spend a year as a placement during the course [interview with Business Partnership Unit, January 2002].

²⁴ In terms of international links, Aston University has a link with Chalmers University of Technology in Sweden which has expertise in entrepreneurship.

²⁵ Aston Science Park, starting in 1983 under partnership between The City of Birmingham, Lloyds Bank and Aston University, is located directly next to the University and provides a wide range of facilities and business support services designed to assist in the development and growth of knowledge-based companies. The Park has a wide range of Units on site catering for larger companies as well as start-up and fledgling companies through the Business and Innovation Centre and Faraday Wharf, the recently opened £9 million incubation unit.

University of Central England (UCE) in Birmingham became a university in 1992. UCE is a large and diverse urban University²⁶ with a long tradition of providing higher and further education for the people of Birmingham and beyond. UCE is characterised by its closeness to its social and economic communities, and committed to enhancing the employability of its graduates. One of the most recent developments is the Technology Innovation Centre (TIC) developed in 1999/2000 as part of Millennium Point.²⁷ TIC is a subsidiary company in the UCE group which delivers engineering and computer technology courses for the University.²⁸ At an organisational level, in collaboration with Aston and Birmingham, UCE is a lead organisation for the New Technology Institute (see Chapter 5 p.173) in the Region, in the new Eastside Learning and Technology Quarter.

Coventry University, formerly Coventry Polytechnic,²⁹ with a strong connection with the Midlands automotive industry and design, makes a significant contribution culturally, financially and socially to Coventry and Warwickshire. Recent developments include the TechnoCentre in Coventry University Technology Park. The University's

²⁶ UCE is an amalgamation of a number of institutes, colleges and schools stretching back 150 years. A particular local speciality is the School of Jewellery situated in the heart of the historic Jewellery Quarter in Birmingham.

²⁷ Millennium Point is a diverse organisation combining a museum, University of the First Age, the TIC and other facilities.

²⁸ The Technology Innovation Centre is a faculty of the University of Central England and a national centre of excellence for technology-based development and innovation. It has been set up to:

- provide advanced higher technological education for undergraduate and postgraduate students;
- advance the knowledge and professional development of qualified engineers and technologists;
- advance the technological skills, knowledge and abilities of businesses, their managements, staff and workforces.

It is a model for activity away from a traditional teaching institution, and has a strong emphasis on links with industry.

²⁹ Coventry University has a long tradition as a provider of education. It can trace its roots as far back as Coventry College of Design in 1843. It was in 1970 that Coventry College of Art amalgamated with Lanchester College of Technology and Rugby College of Engineering Technology. The resulting institution was called Lanchester Polytechnic: 'Lanchester' after the Midlands automotive industry pioneer, Dr Frederick Lanchester, and 'Polytechnic' meaning 'skilled in many sciences and arts'.

In 1987 the name was changed to Coventry Polytechnic and in 1992 the title Coventry University was adopted. However, the Lanchester name has been preserved in the title of the art gallery, the Lanchester Gallery, as well as in the Lanchester Library and the Lanchester Restaurant.

<http://www.coventry.ac.uk/>, 21/03/01.

trading arm is Coventry University Enterprises Ltd (CUE Ltd). It is responsible for a wide range of commercial work and income-generating activities. CUE Ltd operates from and owns the TechnoCentre, and is responsible for the whole Technology Park development. The TechnoCentre has substantial links with European innovation programmes. Supported by the EU, SAIL (Strengthening Academic and Industrial Links) Thematic Network is delivered by CUE Ltd.³⁰

Keele University was given full university status in 1962 with an orientation to promote interdisciplinary and multidisciplinary scholarship, attracting students from all over the UK and abroad. Keele is a research-oriented university with international strength in materials science, cell and molecular science and IT and has recently been developing courses in medicine.³¹ Along with Staffordshire University, Keele contributes to the economy and society of North Staffordshire.³²

Staffordshire University used to be a regional technical and art college from which the modern university has grown. It has two campuses in Stoke-on-Trent and in Stafford, and has a strong link with the local ceramic and pottery industry. Along with Keele University, Staffordshire University has been engaged in the regeneration and local economic development of North Staffordshire through local partnerships, enhancing entrepreneurship and business training.

University of Warwick is situated on the southern outskirts of Coventry. The establishment of the University of Warwick was given approval by the government in

³⁰ SAIL is one of fourteen networks operating as part of the Innovating Regions in Europe (IRE) Network and is co-ordinated by AWM and delivered by CUE Ltd. The IRE is the joint platform for collaboration and exchange of experiences in the development of regional innovation policies and schemes.

³¹ “The University is strong in post-graduate medicine, and this is going to expand to an undergraduate medical school, which has been the long aspiration of the university” [Interview, November 2001].

³² Keele is committed to the local economy employing around 1,700 staff, with a turnover of some £50m and attracting 7,000 students to Staffordshire.

1961 and it received its Royal Charter of Incorporation in 1965.³³ Warwick marked its strategy from its foundation with a wish to be enterprising and outward-looking. The planning of courses developed organically with a marked emphasis on inter-disciplinary cooperation. Business Studies and Engineering - both looking firmly towards the manufacturing heartlands of the West Midlands - were early developments. It is well known for its highly successful Science Park³⁴ and special relationship with the car industry, notably MG Rover in Birmingham through Prof. Kumar Bhattacharyya at Warwick Manufacturing Group. Along with Birmingham, Warwick is a top-class research-led university in the UK with a rapid growth in student numbers to 17,904 as of July 2003.³⁵ The University of Warwick is recognised as an international research university, working with institutes throughout the world. Warwick is part of the European Consortium of Innovative Universities (ECIS), and has been known as an “entrepreneurial university” due to a book which contains the University as one of the case studies.

University of Wolverhampton has five campuses located throughout the west of the Region. Since becoming a university in 1992, Wolverhampton has continued to grow, opening a multi-million pound campus in Telford in 1992 and the Wolverhampton Science Park in partnership with Wolverhampton Council in 1996. The University sees itself as a regional university with a particular commitment to widening access to higher

³³ The idea for a university in Coventry was mooted shortly after the conclusion of the Second World War but it was a bold and imaginative partnership of the City and the County which brought the University into being on a 400 acre site jointly granted by the two authorities.

³⁴ The Director of Warwick Science Park says:

“The property side to the park was important in the early days in creating the right image. Now this is less important. More important is that we can work to transfer intellectual property from the university to the companies on the park. As well as being a key player in organising grants for key high tech companies and links to sources of venture capital, the park also has a network of business angels in place, and promotes knowledge transfer from the university to the companies on the park” (*Birmingham Post*, 23 November, 2002).

³⁵ Warwick University was named top university in the Midlands in *the Sunday Times* league table of Britain’s 121 universities compiled by looking at the quality of teaching, research quality, entry

education in the Region. 60 per cent of its students are local, many from non-traditional university backgrounds, and the University has strong links with business, commerce and community in the Region.³⁶

University Colleges, Higher Education Colleges and the Open University in the Region

There are two University Colleges and two Colleges of Higher Education in the Region.

Harper Adams College was founded in 1901 and is based on a 230 hectare estate near Newport in Shropshire. It is the UK's largest centre for the food, agricultural, and rural business sectors. All the current undergraduate provision involves a period of sandwich placement within the industry. **Newman College** is a Catholic college of higher education located in the south west of Birmingham, which focuses on initial and in-service teacher training. It has good links with small businesses through its IT department. **University College Worcester** is the only higher education institution in the subregion of Herefordshire and Worcestershire. It is a fast-developing organisation. The College has been granted its own degree-awarding powers, and is tipped to receive full university status in 2004. **Birmingham College of Food, Tourism and Creative Studies**,³⁷ the newest higher education college in the Region, only obtained higher education college status in August 2002. It is the United Kingdom's only specialist institution for higher education programmes in the fields of hospitality, tourism and leisure management. Finally, there is the **Open University**³⁸ in the West Midlands

requirements, the percentages of first and upper second degrees awarded, student/staff ratios and dropout rates (*Birmingham Post*, 13 September 2003).

³⁶ 65.9 per cent of students are recruited from the West Midlands and 67 per cent of graduates go on to work in the Region.

³⁷ As Birmingham College of Food, Tourism and Creative Studies gained higher education college status in August 2002, which was late in the phase of this regional case study, it was decided that this study should not incorporate information on the College in the rest of the account. The College became a member of WMHEA in August 2002.

³⁸ The Open University is designed for people who want to study part time or largely off campus, allowing them to fit their studies around work and family commitments. It has a central operation at Milton Keynes. Because of different structure and funding sources, the rest of the account does not include the Open University in the West Midlands although it should be noted that the Open University is a member of regional collaborative programmes such as CONTACT and the Mercia Institute of

which has a regional centre in Birmingham that organises and provides local tuition and study support for the Region.

Links with Business and the Community in the Region

Each university has a special unit which links with (local and national) industry, the community and with the regional agenda. Sometimes these units are called Regional Offices, sometimes these are covered as part of the remit of an Enterprise Office or Corporate Development Office with a wider remit. How each institution organises these offices is the starting point in seeing how the universities view their regions as part of their organisational activities.

As Chapter 4 showed, there are a number of central government outreach initiatives to promote the links between universities and the industry and communities and their regions or collectivities with their region. The following part summarises how each university incorporates these government initiatives into its own institutional structure and strategies especially with regard to third stream activities.³⁹ The focus of this part is on each individual institution's outreach activities and organisational transformation, and their involvement with regional and sub-regional consortia. The principal focus is therefore the 'strategic actions' of agents. The next section looks specifically at the development of regional collaborative outreach programmes, which serve as 'selective strategic contexts'.

Enterprise (MIE). Indeed, the Open University in Milton Keynes is a member of MIE (for university collaborative mechanisms in the Region, see below, p.264).

³⁹ For the meaning, see Chapter 4, p.128 and Chapter 1 p.15 footnote.

Table 7.3. Third Stream Funding and the Institutional Interface with the West Midlands Region

Institution	Central Interface Office	Licensing Office etc	Science Park, Technology Park, etc	Individual HEROBC HEIF (£000)	Main change caused by HEROBC
Aston	Business Partnership Unit		Aston Science Park	HEROBC I 1,100 HEIF 489	BPU created U
Birmingham	Research and Enterprise Services	Birmingham Research Development Ltd	Birmingham Research Park Ltd	HEROBC I 1,100	HEROBC Outreach fellows P
UCE	Corporate Development Centre		Technology Innovation Centre	HEROBC I 550 HEIF 510	Outreach team within CDC P
Coventry	Business Partnership Unit	Coventry University Enterprise Ltd	Coventry Technology Park	HEROBC II 550	Business Partnership Unit created U P
Keele	Business Development Office		Keele Science Park 1987	HEROBC I 550	2 posts created :Business Development; Student placements P
Staffordshire	Research and Commercial Development		Staffordshire Technology Park	HEROBC I 1,100	TCS, SURF ⁴⁰ etc. D
Warwick	Research Support Services	Warwick Ventures	Warwick Science Park	HEROBC I 1,005 HEIF 531	D P
Wolverhampton	The Department for Innovation and External Funding		Wolverhampton Science Park	HEROBC I 550	3 Enterprise Development Managers P
Harper Adams	4 Centres for Reach-out activities			HEROBC I 550 HEIF 806	Flagship projects e.g. Women in Rural Enterprise D P
Newman	Learning Business Centre			HEROBC I and II 185+285	ICT, UFI ⁴¹ U D P
Worcester	No data			HEROBC I 275	No data

D- delivery of programmes**P-** people appointed**U-** new unit created

(The information is as of December 2002).

⁴⁰ Staffordshire University Regional Federation.⁴¹ University for Industry. See Appendix 7.3

The following short summary is based on interviews with personnel at the universities in the Region who work on third stream activities based in these central interface units (e.g. Research and Enterprise Unit, Regional Office, Business Development Office, etc). In Appendix 7.3 interview results are presented with fuller quotations highlighting the different institutional characters, markets, and different responses to third stream funding initiatives. The accounts are far from comprehensive of the activities of each unit, but they are constructed to represent particular points such as:

- The history of the institution in terms of its links with industry and the community and the region, organisational changes and market changes through time;
- Connection with European funding in terms of regional development;
- The impact of new national third stream outreach initiatives; and
- How institutions and the personnel at the institution perceive their role in relation to other regional players and how they respond.

For the account including all universities and two HE colleges with which interviews were conducted, see Appendix 7.3.

University of Aston has been very successful in receiving HEROBC I and HEIF as a single institution and as a result, the new Business Partnership Unit was established. That helps the University's existing links with industry through its Science Park and its extensive links with the City of Birmingham.

University of Birmingham has appointed HEROBC Outreach Fellows who are employed by the central unit, Research and Enterprise Services, and each School to which the individual fellow belongs. The University is going through organisational changes in order to respond to growing third stream activities and the regional agenda (see Chapter 6).

University of Central England established its Outreach team within its Corporate Development Centre (CDC). The role of the Outreach team is to co-ordinate links with

industry and Outreach agents have been appointed in the four sectors which were chosen based on the *West Midlands Regional Economic Strategy* (AWM, 1999).

Coventry University was not successful in its bid for HEROBC first round. With the money from HEROBC II, the Business Partnership Unit (BPU) was created within the Commercial Affairs Development in December 2000. BPU is collecting information from each school and mapping business needs to enhance internal cultural change to work with industry as a university rather than merely at departmental or individual level.

The University of Warwick established the Business and Regional Support Unit (BRSU) as part of the Research and Development Services Office formalising the linkages with the Region. BRSU has been working as the catalyst to 'institutionalise' Warwick's relationship with the Region, and HEROBC funds have been used to strengthen this function, starting in 2000.

Keele University used HEROBC money on two aspects: one is business development through the appointment of a Business Development Manager, and the creation of a new brand, *Keele in Business*; the other is strengthening student-focused learning activities such as work-related learning, student placements and incorporating employability skills into degrees.

Staffordshire University was successful in receiving the maximum amount of £1 m from HEROBC I, out of which 20 to 30 different strands of activities (e.g. student placements, short courses, consultancy, training and networking with partners) have been developed in order to generate further University's links with business and communities.

Wolverhampton University appointed three Enterprise Development Managers through HEROBC I as part of Services to Business in the Department for Innovation

and External Funding. The areas of HEROBC activities have been decided by the market niche for the University and the regional needs identified by the WMRIS.

7-3 UNIVERSITIES AND CREATION OF REGIONAL ADVANTAGE THROUGH NETWORKS

The Higher Education Collaborative Mechanisms in the Region

The emergence of the regional governance, regional innovation and economic development mechanisms discussed above (p227-9) has pushed the higher education sector into wider regional partnership arrangements in the Region. In the West Midlands, as discussed above, individual institutions have played certain roles in their locality and at a sub-regional level, but ‘regional thinking’ by higher education did not exist until the mechanisms set up by the WMRIS came to function in the late 1990s. These acted as a catalyst to incorporate the higher education sector in building regional innovation systems.

One of the exceptions relating to regional HE collaboration preceding RIS is the informal networks between Industrial Liaison Officers (ILOs) who work at offices at universities in relation to growing industrial links. In the West Midlands, there has been a long tradition of having an informal network of ILOs within the Region, reflecting the universities’ working relations with local businesses. Recently, a growing number of people have been appointed with national third stream funding and, as indicated above, they are called business development managers/officers, and outreach fellows.

There is in general a fundamental issue of competition and collaboration between universities. As one of the business development managers at a university in the Region commented:

In terms of teaching and research, universities are competing. We are all competing for student numbers, we are all competing for research funding, whether it is from research councils or from industry, we are all competing for post experience courses, teaching of

courses for companies. But funding is often made available on a collaboration basis in the form of a joint bid in the commercialisation area. In all areas we are competing and now we've got to collaborate and you've got to do joint projects, collaborate. It is not easy to overcome the natural tendency to compete. You have to work with someone who is competing in different areas while you collaborate with joint projects [based on notes from interview January 2002].

Three points are made here. First, there is an increasing emphasis on the necessity for strategic thinking at regional level, and there has been a growing expectation for universities to play this role. Second, numerous new programmes aiming at facilitating university-industry relationships have been forged, and many of them are co-financed by EU funding and national initiatives such as HEROBC (Higher Education Reachout to Business and Community Fund) through HEFCE, and University Challenge Seed Corn Fund, and the Science Enterprise Challenge (see Chapter 4). Third, the new programmes and initiatives seem to be shaping into some kind of regional system of higher education in the West Midlands. For example, a system of Knowledge House (CONTACT) was created which facilitates university-industry interaction through ILOs and business support organisations. This was described in the WMRIS Action Plan, and was realized through national funding from HEROBC.

There has been a rapid development in terms of relationship building between AWM and the HEIs in the Region, either individually or collectively, through sub-regional partnerships and regional consortia. Collaboration increasingly takes place between a number of universities across the Region. This can be seen as an example of the new partnerships and networks of knowledge transfer emerging at regional level between universities, which may lead to regional innovation.⁴²

⁴² For example, The 'ceramics challenge for the 21st century' was an initiative involving Staffordshire Training and Enterprise Council (TEC; then), local universities (Staffordshire and Keele) and the ceramics trade associations. University of Warwick, which is not in the sub-region, provided R&D capabilities for new companies in the area (Universities UK/HEFCE, 2001b: 23).

Efforts are being made at regional level to map out different HE initiatives together, including regional innovation and entrepreneurial schemes, student placement schemes (e.g. TCS, KITTS, STEP⁴³) and other funding opportunities for collaboration between industry and academia, and to integrate them for the benefit of potential users and stakeholders.⁴⁴ The appointment of a Regional Industrial Collaboration Manager earlier in 2002 funded by the RDA, who works for all HEIs in the Region, also seems to have made progress in terms of identifying various opportunities in industry-university links and enhancing institutional communication and collaboration between the RDA, industry and HEIs. These may benefit students, businesses, local authorities, and local communities as well as the university researchers and staff themselves.

In December 2002, AWM approved nearly £1million to help the West Midlands universities deliver region-wide innovation projects through the Knowledge, Innovation and Technology Transfer (KITTS) and Regional Teaching Company Scheme (TCS) programmes.⁴⁵ These programmes will focus on how firms can use the skills of graduates and students to help them advance innovative ideas or new products (*Birmingham Post*, 18 December 2002). The Head of Innovation at AWM⁴⁶ says:

There is clear evidence that companies that work with universities gain significant advantage over their competitors... Graduates not only bring new technology skills into the business, but also help to create new ways of thinking and new approaches to old

⁴³ Shell Technology Enterprise Programme.

⁴⁴ For example, launched in 1997, the Lord Stafford Awards Initiative encourages businesses in the West Midlands to improve their performance by tapping into the wealth of knowledge, expertise and specialist facilities offered by the Region's universities and HEIs.

⁴⁵ There are other programmes supported by AWM: Graduate Advantage (lead by the Career Service of Aston University, all regional HEIs involved); HE Full Circle (Staffordshire and Keele Universities); High Level Vocational Qualifications (UCE, TIC); Year in Industry; Graduate Fair; Graduate Apprenticeship in Engineering and IT (AWM, 2003b, *Lambert Review of Business University Collaboration, Response from Advantage West Midlands*, 2003 June).

⁴⁶ As a significant agency factor, which promotes the emergence of strategic actions at regional level, the role played by the Head of Innovation at AWM, who is seconded from Staffordshire University Regional Office (now renamed as Research and Commercial Development), is noteworthy. She has decades of experience as an ILO at the university in a number of areas involving HE, industry and community interfaces and has played an important role in linking the RDA and HE in the Region.

problems... We are delighted to be working with our university partners to offer these flexible schemes to West Midlands companies (*The Birmingham Post*, 18 December 2002).

Some of the structural factors which have promoted the development of HE regional collaborative mechanisms are examined in detail below. The Table 7.4 below summarises the various regional consortia of higher education:

Table 7.4. Multi- spatiality of HE initiatives and development of regional mechanisms

	European	National 3rd leg funding	Regional	Regional HE mechanisms	Sub-regional HE mechanism
1996	RIS		WMRIS		
1998			RIS published		
1999		HEROBC1-each HEIs SEC launched	AWM set up	WMHEA set up	
2000		HEROBC2	RES	CONTACT	AKA
2001		WM SEC		Mercia Institute of Enterprise	
2002	ERDF	HEIF FRESA P4P	FRESA P4P	Mercia Spinner; MEDICI; Regional Technology Network	P4P
2003	Innovation Action Plan		Cluster Action Plan launched New RIS	CIMs appointed COGs	

Three key questions emerge in investigating the development of the regional higher education landscape:

- Are there a new regional collaborative market and governance of higher education emerging because of national initiatives promoting the regional collaboration?
- In what ways do national initiatives (e.g. HEROBC, HEIF and SEC) promote regional collaboration along with European supported programmes such RIS, ERDF and ESF?

- If there is a regional system of higher education emerging, in what ways is it an integral part of the regional innovation system?

First of all, the overview of the WMRIS Action Plan provides some insights into the evolution of the involvement of HEIs in the regional agenda. It seems that the WMRIS was the first formal regional catalyst that involved universities and HEIs in wider regional collaborative mechanisms. However, the representation of the regional universities in the two Groups of WMRIS is far from comprehensive. Only two universities (Birmingham and Warwick) and one University College (Worcester) were represented in the membership of the Steering and Operational Groups.⁴⁷ When the WMRIS was initiated in 1996, WMHEA (West Midlands Higher Education Association, see below) did not exist. This may show that the recognition of a regional collective role for universities was not so strong in the West Midlands Region compared with the North East and Yorkshire and Humberside, which saw the original establishment of university consortia in 1983 and 1993 respectively (see Chapter 8). The emergence of these regional collective mechanisms of universities in the West Midlands Region since the late 1990s is investigated below.

WMHEA (West Midlands Higher Education Association)

In terms of the involvement of the HE sector in the regional institutional building, the WMRIS Action Plan ascribes the future role of universities in the Region to WMHEA, a newly created formal regional association of HEIs. The Action Plan says that WMHEA acts as ‘lead partner’ to “develop regional knowledge sharing networks between HEIs, research centres and business” and to “support an enhanced regional learning network across HE, FE and other sectors”. There are also many action plans involving WMHEA as ‘other partners’, such as to “improve innovation skills in

business clusters and HEIs”; “use graduates more effectively in SMEs”; “develop centres of cluster excellence in design and technology and business support particularly in high technology corridors”; “diversify the region’s economy through new developments within high technology corridors (to support clusters)”; “encourage innovation, ‘foresight’ and new product development in SMEs”; “support business start-up including spin-out activity from Higher Education Institutions, research centres and firms in clusters and follow-through post-incubator support”; “develop and agree a regional skills strategy”, amongst others (WMRIS, 1998).

WMHEA was created in September 1999 in order to represent the voice of 12 (then, now 13) higher education institutions in the Region.⁴⁸ It is one of the nine HERAs (Higher Education Regional Associations) in the English regions discussed in Chapter 8. WMHEA is an incorporated association of the nine universities and four HE colleges in the West Midlands Region.⁴⁹ It has a Strategic Board comprising Vice-Chancellors, and a Management Committee of Pro-Vice-Chancellors.⁵⁰ Until September 2002, WMHEA

⁴⁷ There were five persons from HE sector represented in the Steering Group, and seven persons in the Operational Group, including personnel from the university science park and private company established by one of the universities.

⁴⁸ The university member institutions pay £5,000 per year. HE Colleges and the Open University pay £3,000.

⁴⁹ The purpose of WMHEA is to:

- Encourage and support joint initiatives and developments;
- To provide a forum for inter-institutional discussion of regional, national and international issues;
- To support a framework for curriculum development;
- To support research and development;
- To encourage mechanisms for staff development and exchange;
- To support economic and social regeneration;
- To co-ordinate, where appropriate, regional developments emanating from member organisations;
- To engage with regional bodies e.g. Advantage West Midlands, Government Office for the West Midlands, West Midlands Regional Assembly, to facilitate, where appropriate, the co-ordination of initiatives involving the regional Higher Education sector (WMHEA, 2002).

⁵⁰ There are following sub-committees and individual institutions take on a particular task:

- Widening Participation and foundation degree (Worcester);
- WM Industrial Liaison Group;
- ESF consortium;
- Engineering education (Aston);
- Language education (Warwick).

was a very small organisation in terms of the central management team. The WMHEA has been one of “the last to be developed and has been the smallest in terms of centre of management team”(The Acting Regional Co-ordinator, interview August 2002). The Association was operated with staff seconded part-time from member organisations. Due to the rapid growth of the activities of the Association, for the first time, full time staff for the secretariat was recruited in October 2002.

The link with AWM is getting increasingly strong but, despite the growing expectations of the HE sector in the Region, the organisational capacity of the Association has been limited, and there are the different institutional priorities and politics to be overcome. The following two comments from business development managers at two universities in the Region show their view on the limited role of WMHEA. The interviews took place in 2002.

In the West Midlands, WMHEA is trying to make universities collaborate, but it is not necessarily fostering as much collaboration as it should between universities. The reason is partly because not all universities are the same. Universities such as Warwick and Birmingham are Russell Group institutions. Having different sorts of institutions sharing an agenda is difficult [a business development manager, based on notes from interview, January 2002].

In terms of the relationship with AWM, there is a potential tension in terms of representation of institutional interests whether it is through a formal collaborative mechanism, namely WMHEA, or through individual institutional links which may represent specific individual universities’ priorities, which are often linked to the needs in sub-regions.

We all used to work individually in terms of our relationship to AWM in order to find a way to get involved with the *Regional Economic Strategy*. WMHEA has become a collaborative forum as a gateway to AWM. In reality it has been proving quite difficult. Lots of institutions have established their own relationships with AWM and want to

[based on interview August 2002].

keep them. From AWM's point of view, it is easier to have one voice and put it in the regional strategy-Why should we talk to all 12 HEIs? They want all of them to come through WMHEA [based on notes from interview with a business development manager, September 2002].

Another issue raised by one of the business development managers at a university concerns the extent of the representation of the interests and concerns of Business Development Managers/Industrial Liaison Officers (ILOs). At the time of interview (September 2002), WMHEA represented the voice of ILOs to AWM.

WMHEA has a massive agenda in teaching, research and commercial activities. The tension there is that ILOs feel in the area of commercial activities we should be representing all universities; we should be speaking to AWM [based on notes from interview, September 2002].

The ILOs meeting preceded WMHEA, and there has been more recognition of the necessity of direct collaboration between ILOs rather than between Vice-Chancellors. The mechanism of formal regional collaboration has been constructed with support from the national strategy of HEFCE but, in order to respond to the specific issues of sub-groups such as ILOs, which have a strong role in the regional agenda, or the specific needs of sub-regions, the mechanisms developing in the Region have not been sufficient to respond to the diverse voices of the sectors and the diverse needs in the Region.⁵¹

So far, WMHEA has functioned as a representation and communication body for consensus-making among member institutions rather than an organisation delivering its own services. However, the major developing area is the number and scale of projects being undertaken in conjunction with regional partners on behalf of members collectively such as strategic planning for Partnership for Progression (P4P)⁵² in the

⁵¹ A new mechanism representing ILOs has been under discussion in 2003.

⁵² Partnership for Progression (P4P) (now named Aim Higher) is an attempt at regional level to co-ordinate activities of widening access through sub-regional planning groups, in collaboration with other stakeholders such as LSCs, further educational colleges, and employers. There is a WMHEA subgroup

Region and representing HE about the *Framework for Regional Employment and Skills Action* (FRESA). It is noteworthy that in the Region, with the initiative of the Government Office, WMHEA is committed to the ESF Objective 3 Consortium Action Plan.⁵³

In line with the business cluster development policy set out by AWM (see p.236), eight cluster innovation managers were appointed through WMHEA in January 2003, funded by AWM for three years to help HEIs engage in cluster activities in the Region, and look into the future needs of clusters. One of the roles of the Cluster Innovation Managers (CIMs) is to provide the Cluster Opportunity Groups (COGs) with the latest research in the HEIs relating to their cluster.⁵⁴ The difficulty of finding university senior academic staff to be seconded to WMHEA as a CIM was pointed out [a personal communication from a CIM, August 2003]. There is a gap between the universities' individual career structure and the new role created to meet the growing expectation of the regional role to be played by universities.

In the Region, so far, many of the HE collaborative initiatives have been carried out separately from the WMHEA. Many of the regional collaborative mechanisms are funded by HEFCE third stream funding such as HEROBC (CONTACT), HEIF (Mercia

which meets every 3 months; there are some co-operation in some widening participation schemes. The problems of w/p is different universities have different focus.

e.g. UCE's priority is to retain students. They have already reached benchmarking target of local students; Birmingham aims to attract more students locally, to make the student body more diverse. It is difficult to collaborate and compete at the same time [based on notes from interview, October 2002].

⁵³ WMHEA has a number of link with Regional Observatory. One of the Vice-Chancellors, was until recently the Chair of WMHEA, sits on the board of directors of the Observatory so as to ensure that the Observatory is aware of, and take into account the various initiatives within higher education.

⁵⁴ In order to inform CIMs, WMHEA commissioned the Centre for Urban and Regional Studies to map out areas of research in the universities which relate to the clusters. Learning network comprising researchers from several HEIs looking at target cluster areas in the Regions was formed. These were: Tourism and Leisure (Staffordshire); HVCP (UCE); Interactive Media (Birmingham); ICT (UCE); Building Technologies (Wolverhampton); Food (Harper Adams); Environmental Technologies (Wolverhampton); Business Services (Newman College); Transport Technologies (Birmingham); and Medical Technology (Birmingham).

Spinner; MEDICI ⁵⁵) and OST-funded SEC (Mercia Institute of Enterprise). Below, the focus is on these three regional collaborative programmes which appeared from bids for national government funding as part of the recent third stream initiatives.

CONTACT

The CONTACT was an initiative funded by HEFCE, set up by HEROBC second round collective bidding for three years. ⁵⁶ The RIS document refers to CONTACT as “a form of knowledge house” in the Region. It was created with the support of Vice Chancellors, and through the existing links between Industrial Liaison Officers (ILOs) in the 13 HEIs in the Region. ⁵⁷ It was set up separately from WMHEA (c.f. the North East, North West, see Chapter 8). CONTACT is a brokerage system through its link with universities and organizations such as the regional Manufacturing Advisory Service (MAS-WM) and SBS/Business Links. There are 5 sub-regional business development officers (field officers) who act as an interface between businesses and universities.

This is the first time for universities in the West Midlands to collaborate with each other rather than to compete to work with industry, recognising the fact that each university has different skills and expertise. The central focus is building up networks and

⁵⁵ Under HEIF, an East and West Midlands wide Consortium of Universities with a record of research excellence in the fields of medicine and biosciences has been formed. MEDICI (Midlands Medical/BioSciences Enterprise Development And Innovation Consortium) has received the awards including £2 million of funding from HEFCE. MEDICI includes Birmingham Aston, Leicester, Nottingham and Warwick Universities with Keele and Wolverhampton as associate members. The £2 million will allow MEDICI to train medical and biosciences staff and students across all seven universities to work with business and use their research knowledge to the advantage of both commerce and society as a whole. The award also represents a first for the two RDAs in the Midlands as MEDICI will work with their staff to promote the expertise available in the heart of the country to medical and bio tech companies. The aim is to encourage medical and biotech companies to view the Midlands as their first choice for new investment and new jobs.

<http://www.buzz.bham.ac.uk/issue02/story02.htm> access date 05/02/03.

<http://www.advantagewm.co.uk/work/corridors/three.asp> access date 27/02/03.

⁵⁶ John Robson, “CONTACT the West Midlands- a model for collaboration” http://www.unisdirect.com/conference/programme/presentations/john_robson.pdf access date 08/08/03.

⁵⁷ “ILOs have had meetings for the past 15 years but as a rather independent body.

Since past 5 years, there have been more and more collaborative works between universities. So the link is not new but it has not been wide spread.” [interview with CONTACT manager, 12 April 2001]. Prior to the establishment of the current CONTACT, an ILO at Keele University established a group to represent the West Midlands Universities and employed a marketing company to assist with market research and the development of the marketing material. This was funded by the ERDF and administered by GOWM. Lord Stafford Awards was also an initiative to create collaborative work.

personal contacts to work effectively and building relationships between universities and industry [field officer October 2001].

The majority of CONTACT enquiries to the HEIs come from MAS-WM, and are mostly answered by the less-research intensive universities due to the low-tech nature of the enquiries. It builds on the outreach activities of individual universities in the Region through HEROBC I, and the CONTACT team made a close link with ILOs and the people appointed by HEROBC I. The difficulty pointed out is that the ways outreach activities are structured are different depending on the institution (e.g. Aston-centralised; Birmingham-central-School base; see above p.250).⁵⁸

The CONTACT team has set up an e-mail enquiry system through sub-regional business development officers, ILOs and HEROBC I officers at individual institutions. Thus there are positive signs of short-term change.⁵⁹ However, there is an issue of longer time scale and sustainability:

There is a recognition that a long time scale is necessary for universities to change, to develop commercial activity, 'third stream' activities. It may take a generation for people and organisations to change. Three years is not enough: it is a seed funding by the national government [field officer interview October 2001].

The fundamental issue for CONTACT and other HE collaborative programmes like this is how to make themselves sustainable as programmes.

Another issue is how to link up with complex existing links in a synergetic way. Although CONTACT is working closely and successfully with MAS-WM, there seems to be a potential tension between CONTACT and other business support services and organizations. Also, there is sometimes confusion in businesses with the idea of

⁵⁸ As one of the industrial liaison officers put it:

"Collaboration under HEROBC II is good, but it is difficult because of different starting points, different background, history and missions of institutions" [September 2002].

⁵⁹ "CONTACT has improved response time. They set 48 hours response time for business, now down to 12 hours. That has definitely changed things for the better" [industrial liaison officer at a university in the Region, interview September 2002].

universities in the Region working together. This was mentioned by one of the field officers: “We have to make things clear to clients. We are trying to avoid the confusion with the existing links” [field officer, interview 7 December 2001]. Therefore ‘joined-up thinking’ not only between universities but universities and public sector organisations working with SMEs is significant.⁶⁰

Another issue is how to integrate academics into the knowledge networks. Some individual academics at universities have a number of existing links with businesses and the community through their own research activities, often through European funding, but it is not always easy for the CONTACT team to tap into this expertise and integrate it within their system. Universities are huge and complex organisations, and it is difficult to discover and include all the HE expertise available for businesses in the Region with a small team. At institutional level, some universities are trying to promote university-industry interactions by appointing senior academics with industry experience within corporate development offices as a ‘role model’ which might be a way to fill the gap between academics without industry experience and the new culture of universities.⁶¹ Some research-intensive universities or departments may not necessarily find much motivation to work with companies whose needs don’t match with their research activities. Hence, the biggest challenges are how to maintain the collaborative mechanism of the knowledge transfer network in the Region; and how to prove that collaboration works better than competition; and how to integrate the programme as part of the regional innovation system in a strategic way. The market for

⁶⁰ “Government policies are required to rationalise organisations which provide services to support small businesses” [CONTACT Manager, interview, October 2002].

⁶¹ Two academics with ESF project experience had no links with the CONTACT team at the time when the interviews were conducted in 2002. An academic with an ERDF funded project was not enthusiastic about collaborating with CONTACT. The relationship seemed to be rather competitive than collaborative. See Appendix 7.3 for additional information on ESF project in the Region.

business support and the networks of universities in the Region need to be strategically balanced.

Mercia Institute of Enterprise

The Mercia Institute of Enterprise (MIE) was launched by Lord Sainsbury in January 2001. It is one of the thirteen Science and Enterprise Centres funded by the Office of Science and Technology (OST) across the country (see Chapter 4 p.130). MIE is led by the University of Warwick in collaboration with seven other universities and four West Midlands University Colleges in the Region and the Open University in Milton Keynes have been accepted as members. It provides an “integrated support system with its region” (Schutte, 2001: 154-161). This includes a wide range of schemes not only for promoting spin-out company formation, but supporting proposals for research commercialisation projects, and developing graduates with an entrepreneurial spirit which would establish an entrepreneurial culture in the universities in the Region.⁶² The efforts are being made through MIE, by disseminating the culture of entrepreneurship both in the short term (through the Enterprise Group in relation to commercialisation of research) and the long term (through the Education Group in relation to teaching entrepreneurship).

MIE is the largest Science Enterprise Centre in England in terms of the number of member institutions in England and it is unique as it involves all the HEIs in the Region having both the research-intensive and the less research-intensive universities and university colleges as members ⁶³ (see Chapter 5 and Appendix 5.2 for comparison with other SECs in other English regions). It has added a significant HE collaborative

⁶² Availability of venture capital and sustainable mechanisms for entrepreneurship activity are two key areas. MIE designs and delivers programmes such as the Enterprise Research Fellowship Scheme and the Enterprise Fellowship Scheme (EFS). EFS has provided financial support for start-ups from HEIs. However, many of these financial schemes are short-term and there need to be a more sustainable support mechanism.

⁶³ In the first bid, which failed, the proposal was single institution based.

mechanism to the Region, whilst one of the key aims of the WMRIS is the “creation of wealth through enterprise across the Region”. MIE has a close link with AWM and has provided a platform of cross-university collaboration for the implementation and success of the RES in the West Midlands.

Entrepreneurship activities are concentrated on three research-intensive universities in the Region, namely Warwick, Birmingham and Aston.

Collaboration means that Warwick, Birmingham and Aston are giving knowledge to other universities, not the other direction. The difficulty of working collaboratively is that all institutions are in competition [Director of MIE, based on notes from interview November 2002].

MIE institutions compete and collaborate. In the area of entrepreneurship education, there is more collaboration, and universities are eager to collaborate sharing experience and expertise [interview the Chair of Education Group, September; 2002].⁶⁴ Apart from OST funding, MIE receives RDA money and some European funding. MIE works closely with the ILOs’ group, CONTACT, as “marketing arms” in terms of knowledge transfer, and Mercia Spinner in terms of enhancing spin off companies (see below).

The key question is how to maintain the collaborative mechanism and how to make it sustainable with large numbers of member institutions with different resources and expertise which both compete and collaborate. MIE is meant to be self-financing after 5 years, but there is a conflict.⁶⁵ How to define the relationship with its members and what services it is going to provide to its members; how to collaborate with other regional partners and other HE collaborative programmes; and how to get funded are

⁶⁴ Entrepreneurship education needs to be strengthened at higher education level and better linked to provisions at secondary school level. An enterprise module conducted at undergraduate level needs to be linked to skills development provisions such as student placement.

⁶⁵ “If that [self-financing] is to happen, that means MIE has to be creating its own products and to compete with universities. Our job is to be an umbrella organization and network. If we are to become like a university with its own institute, services and products and income and then we are competing with our objective. That is the difference between other Science Enterprise Centres, because we are a consortium not a single institution” [Director, based on notes from interview November 2002].

the key questions that MIE as a regional HE collaborative programme is facing.⁶⁶ Like CONTACT, the biggest challenge is the time scale of public funding and the sustainability of the collaborative programme. MIE provides a model of an entrepreneurial knowledge network in a region. It is a regional knowledge asset, but there is and will be a complicated relationship management issues with a big number of member institutions.

Mercia Spinner

Under HEIF, Mercia Spinner is a project involving eight universities in the Region, supported by £7.5 million of funds from HEFCE and Advantage West Midlands. Spinner aims at increasing the number of university spin-off companies in the West Midlands from 10 per year to 27 per year by 2005.⁶⁷ Of the eight universities in the Region, Warwick and Birmingham have substantial technology transfer experience, and had spun off 19 companies before 2002. The other six universities, however, had only one spin-off company between them. The Spinner project is creating a network of 16 new business development managers across the eight regional universities, with Birmingham and Warwick providing training and support in the latest methods of technology transfer and company creation.⁶⁸ All eight universities, including several that were previously inactive in company formation, have contributed to this total. The Director of Warwick Ventures at the University of Warwick, said:

We are excited about the success of Mercia Spinner, and the benefits it will bring to the Region. In 2002, Spinner supported over 50 new exploitation projects, each of which

⁶⁶ "There is no standard metrics for Science Enterprise Centres. They cannot be easily evaluated. The question is how you evaluate progress. Value for money metrics don't work" [based on notes from interview, university academic, September 2003].

⁶⁷ The eight universities conduct over £160 million worth of innovative research into medicine, biology, engineering, chemistry and other sciences each year, but until recently, this wealth of research was not fully exploited to benefit the West Midlands and the UK as a whole. The target number was calculated by benchmark against Imperial College. Ederyn Williams – "Spinner Project"
http://www.unisdirect.com/conference/programme/abstracts/ederyn_williams.html access date 05/02/03.

⁶⁸ Spinner also provides fast-track "Pathfinder" and "Accelerator" awards to help the potential companies get started. So far, 50 "proto-companies" have successfully applied for and won such a grant.

was a potential new spin-off company to exploit a new technology. With twelve spin-off companies already created, we are well on the way to our target for 2006 of 33 new spin-off companies every year.⁶⁹

In comparison with CONTACT and MIE, Mercia Spinner does not seem to have had problems of collaboration. The Director of Warwick Ventures who runs Mercia Spinner commented that “Spinner application was the easiest”. Warwick Ventures and Birmingham Research and Development Ltd, the exploitation arms of the Universities of Warwick and Birmingham, lead the project. The expertise of the two leading universities will be shared by the other six universities.

The West Midlands is unique in involving all universities. The Regional Development Agency was playing a key part...It is partly the attitudes of the big universities but also the attitudes of the others. Not only good leaders but good followers who recognised their places [based on notes from interview, 26 June 2003].

Warwick and Birmingham have worked together through the University Challenge Fund⁷⁰ which was open to the other universities in the Region. The Mercia Spinner developed this collaboration, and the other universities accepted the Warwick/Birmingham leadership. For comparison with other regions see Chapter 8.⁷¹

AWM was committed to give financial support irrespective of HIEF money, which was another factor behind successful regional collaboration. AWM has been keen to increase the number of spin-off companies from the universities in the Region, and

⁶⁹ <http://www.newsandevents.warwick.ac.uk/index.cfm?page=pressrelease&id=849> access date 30/01/03.

⁷⁰ The Government's University Challenge Seed Corn Fund provides resources to develop 'spin-out' activities. The Region's universities (Warwick and Birmingham) jointly bid for funding. See <http://www.merciafund.co.uk/> See also [http://www.ost.gov.uk/enterprise/knowledge/index.htm#University Challenge \(UC\)](http://www.ost.gov.uk/enterprise/knowledge/index.htm#University%20Challenge%20(UC)) access date 08/08/03.

⁷¹ In Yorkshire, three research universities formed a consortia, and won the largest grant from the University Challenge Fund which formed White Rose Technology Seedcorn Fund. They didn't encourage the other universities to join and the others did not join. In the East Midlands, universities did not succeed in gaining the first round of University Challenge Fund, as some of the universities did not agree on collaboration and the development of collaborative mechanisms in the Region was slow. In the West Midlands, Birmingham and Warwick, whose research represents half the research conducted in the Region, were open to inclusion of the other universities.

the Spinner is seen as one of the most successful examples of collaboration between the RDA and the HE sector.

An important element of the Project is that the two universities with established technology activities are providing consultancy to the other six universities, so they can move more rapidly towards best practice. This activity commences with a series of visits to the individual universities, in order to form links with the senior management staff, as well as the technology managers (AWM, 2003b).

In terms of the management of the programme, the differing structure of universities as described above is significant. BRDL, as a private company separate from Birmingham University, cannot receive public funding such as HEIF. Warwick Ventures approached BRDL and was pleased with the idea of working with public money. The relationship was built up including DTI funded Mercia Biotech and Mercia Spinner. As to Mercia Spinner, BRDL is a main contractor with AWM and Warwick Ventures with HEIF. Spinner stimulated Wolverhampton and Keele to create new “Innovation Units” along with the appointment of Business Development Managers. Spinner has worked as a catalyst providing new kinds of staff, inducing organisational changes and influencing the senior management of the universities.

There are things that can be shared and that cannot be shared which is seen as the key for successful collaboration.

The Universities don't have to transfer intellectual property in terms of inventions. We help individual institutions to do things better. We don't share intellectual property and internal processes as to how to process it. It's like an artists' collective. You share the studio but you do your own picture, you don't share pictures [Mercia Spinner Director, June 2003].

The issue of sustainability remains. For research intensive universities which have 20 spin-out companies, there are chances for a few companies to survive but for the less research intensive with fewer start-ups, after the public funding has ended it will be difficult to maintain a programme of this sort. But, certainly, Mercia Spinner seems to

have provided both new opportunities for institutions which have no experience of spinning out and new cultures and organisational change within the universities and a collaborative platform between the universities.

Structure and Agency Factors in Network Formation

WMRIS prepared the first framework of broad partnership in the Region. The key conclusion of WMRIS was the importance of ‘networks’. There are some examples of regional HE collaboration developed from European funding. As a notable example, the Regional Technology Network was developed from SME related works funded by ERDF in Objective 2 areas. It is now a joint project among a number of West Midlands universities partly supported by the EU money, and this is now growing into a ‘bottom-up’ network structure involving many of the regional HEI departments specialising in design and engineering.⁷²

Each of the above mentioned university consortia provides a different model of networking. The publication of the White Paper, *The Future of Higher Education* (DfES, 2003), and the formation of AWM’s ten priority clusters and their Cluster Opportunity Groups (COGs) and the forthcoming HEIF II call for bids have all promoted the further strategic networking of regional universities. Regional consortia of HEIs, providing the different institutional expertise, resources, and experience are incorporated, *can* be a very effective way of accelerating progress in regional collaboration.

Thus there has been a gradual development of regional collaborative mechanisms of HE and regional innovation systems in the West Midlands. However, although there are many new initiatives, compared with the northern regions in England, institutional coordination of issues such as skills development, business growth, and the

⁷² The accountable body for the project is Wolverhampton University. The GOWM and AWM are discussing jointly supporting this programme financially [notes from interview, June 2003].

competitiveness agenda still seems to be weak at the regional level in the West Midlands. In other words, it seems that the creation of intellectual, social and human capital is not strategically coordinated within the regional innovation system with universities/HEIs as strategic regional players. This is probably to do with the geo-economical diversity of the West Midlands and its relatively short history of collaborative mechanisms established between HEIs. The mechanisms for the *regional innovation systems* have been gradually constructed through the WMRIS, the RES, and FRESA, but conditions to create real forms of networks such as trust and reciprocal relations do not seem to be robust enough at a regional level. The reciprocal relations and interactions happen mostly at sub-regional level, and it seems that universities have played a greater role as part of sub-regional partnerships.

However, the Region saw a rapid development of regional collaborative mechanisms particularly through higher education national government initiatives. Compared to other regions in England, the West Midlands higher education landscape is characterised by a number of horizontal network mechanisms co-existing whilst the higher education regional association (HERA) does not have a strong delivery mechanism (see Chapter 8).

A typology of network mechanisms in the West Midlands is helpful.

Table 7.5 Structure and Agency factors in forming Multi-Scale Regional Networks

Structure factors	National-Regional-European frameworks	European Regional framework	National Regional framework	Regional Regional Framework
Agency factors	EU-GO-WMHEA DWP/DfES-AWM-WMHEA	EU-GO-AWM-WMHEA EU-GO-HEIs	OST/HEFCE-HEIs	AWM-WMHEA AWM-HEIs
Strategic actions and Strategic Contexts	ESF Action Plan; FRESA; P4P	Regional Technology Network WMRIS Innovation Action Plan	WMHEA CONTACT MIE Mercia Spinner	Cluster Action Plan COGs-CIMs RES Regional TCS, KITTs

(For acronyms see Glossary).

WMHEA, for example, was created as *a strategic action* amongst the regional HEIs to respond to the rapidly growing regional agenda after pressure from HEFCE. It has served as *a strategic context* for the HEIs in the Region and other regional partners which came to work together under WMRIS and RES. Now WMHEA functions as a strategic actor along with individual universities. There is potential tension between the interests of the collective strategic agent and the individual strategic agents, and so far WMHEA has tended to minimise its interest as a collective strategic agent (see p.258). Increasingly, there is a demand from AWM for more collaborative action from the HEIs in the Region, and national government initiatives promoting third stream activities have pushed regional collaboration forward in the West Midlands Region more than in some other regions which have had a longer tradition of regional collaboration.

Now there are more channels at a regional level to form networks as strategic alliances in the Region. These have been made possible through new mechanisms of communication and enhancing organisational capacity (e.g. HEROBC appointed outreach officers; business development managers through Mercia Spinner; CONTACT

field officers; CIMs through WMHEA and AWM). These are agents themselves but they are strategic actors and contexts at the same time created through the channel of multi-level strategic agents such as the EU, national government, and the regional development agency. It would be interesting to observe how the 'high tech' knowledge transfer from a university can be linked to the regeneration and skills development agenda of the sub-regions. It seems there is a potential role which the RDA could play in linking the intellectual capital of regional universities and building up the social and human capital of the locality in a more strategic way.⁷³

The processes of forming networks as strategic actions are diverse. Some developed from the former European funding (e.g. the Regional Technology Network), some developed as an initiative of top senior management (WMHEA) with national funding as an incentive. The origin of CONTACT was a combination of European funded collaboration, informal ILO networks and national funding opportunity (HEROBC) supported by senior management level such as Vice-Chancellors. The CONTACT initiative, through its link with universities and intermediary bodies in the sub-regions, can be seen as a model of a multi-level governance structure of knowledge transfer. Mercia Spinner was a combination of funding opportunities recognized by two research-intensive universities, two offices of different kind, Warwick Ventures and BRDL, which were open to regional collaboration with the significant financial and organizational support from the RDA.

⁷³ For example, in order to develop business clusters, detail understanding about value-chain dynamics, supply-chain dynamics, technology trajectories, skills dimension and market issues are indispensable. Foresight exercises seem to be significant in identifying the needs of firms and applying technology. Creating a form of Intellectual Property bank at a regional level is another example [based on notes taken at WMHEA HEIF 2 Conference, 6 October 2003]. For further discussion of the notion of 'social capital' see Woolcock (1998); Woolcock and Narayan (2000). See also Chapter 3, p72

Universities and the Regional Innovation System

The West Midlands Region has seen the gradual construction of a regional innovation system within its knowledge economy over the past decade. Universities have played a significant role as a knowledge generation subsystem in the Region (see Chapter 3 p.77). The recognition of the gap between knowledge generation and exploitation sub-systems has led to the creation of new regional mechanisms promoting university-business linkages and start-up companies exploiting university research.

The changing landscape of higher education and innovation systems in the West Midlands provides three principal messages. Firstly, the third stream funding provided most of the universities' new infrastructure to work with businesses and the community and with the Region. This includes the change in internal communication systems as many universities had no way of tracking the resources and expertise available to the Region. The knowledge brokerage system created by all HEIs in the Region has changed the relationship between small businesses and universities, in particular, the new universities. Universities are behaving in a more business like way. Secondly, the new third stream initiatives have provided the Region with a base to work in collaboration with the universities. The advent of AWM accelerated the regional joined-up thinking, but it has taken a long time for both universities and the private sector and government bodies to realise the ways each sector work together and find the complementarity of activities. Thirdly, there still remains a necessity for the strategic coordination of existing links, new infrastructure and agents, especially in the light of the emerging multi-level governance structure in English regions.

The regionalisation of the knowledge economy is under way through building up innovative networks within the Region. The West Midlands has a history of regional planning and collaboration but, in terms of partnerships and horizontal collaboration

involving HEIs, most of the relationships are found at sub-regional level rather than at regional level. Funding from the European Union has played a significant role in accelerating the regional processes of vertical as well as horizontal interactions between universities and regional partners. Given the current structural factors of higher education policy and European regional innovation policies, further strategic actions are needed from the universities and their regional partners in order to seize a regional advantage in the knowledge economy.⁷⁴

CONCLUSION

The West Midlands Region has not had a strong history of regional collaboration between its HEIs. It was the effects of a European Regional Innovation project, the advent of the RDA in 1999, and the ‘regionalisation’ of higher education policies as discussed in Chapters 4 and 5 that changed the organisational field of higher education and regional development in the Region.

The West Midlands Region has been building regional innovation systems aiming at diversifying the manufacturing-based economy into the more knowledge-based one. The case of the West Midlands Region shows that the forms of networks and collaborative mechanisms developing in the Region are determined by the wider structure in which the Region as the organisational field is located. It is also important to examine the strategies of each organisation as an institutional actor in forming networks as strategic alliances. This chapter has illustrated the different strategic processes of networking in the West Midlands between universities and their regional

⁷⁴ A recent development in the West Midlands Region is noteworthy. Since the launch of AWM’s business cluster action plan in early 2003, networks in the Region have developed rapidly. The links are made between FRESA and cluster action plan, both led by AWM, the Regional Development Agency. As of October 2003, links have been made between AWM’s business cluster action plan and HEIs through Cluster Innovation Managers (CIMS) coordinated by WMHEA. The further links can be developed by identifying local employers’ needs, linking them to business support organisations and matching these with HE expertise in the areas of clusters identified by the RDA [based on notes taken at WMHEA HEIF 2 Conference, 6 October 2003].

partners, and examined how regional networks are managed financially, institutionally and strategically.

It has been the combination of the European, national and regional programmes that brought universities to the central stage of regional development. There are elements of path dependencies in the economy of the Region determined by historical structural factors, but there are surely new changes made by current policy initiatives bringing in new people and new institutional mechanisms. Therefore, it is the combination of structural factors and agency factors that explains the new network formation in the Region. The next chapter gives a comparative broad picture linking the wider national structure to institutionalisation processes in each region across the whole of England.

Chapter 8

Knowledge Networks as Regional Strategy: Universities and Multi-level Innovation Systems in English Regions

INTRODUCTION

Having looked specifically at the University of Birmingham and the West Midlands Region, the aim of the chapter is to compare the different *strategic contexts* and *strategic actions* emerging in the nine English regions in the light of the ‘regionalising processes’ of higher education, and to examine the developing regional architecture of knowledge economies as discussed in Chapter 5 (see, p.164). The focus of this chapter is on collective institutionalisation processes involving universities through examination of the institutional networking process in the nine different regional settings.

Different *regionalities* of higher education are emerging in English regions. In all English regions, the Regional Economic Strategies (RESs) prepared by newly created RDAs seem to be emphasising the role of higher education in regional development (Chapter 5, p.175). Such strategies have affected the relationships between regional stakeholders and higher education institutions. As Chapter 5 (p.167) showed, the Higher Education Funding Council for England (HEFCE) has been promoting the formation of regional associations with small pump-priming funds and, during 1999 and 2000, all English regions established regional associations of higher education (HERAs).

¹ The underlying policy assumption is that there are a varying number of universities and HEIs in each region, and co-operation is needed between them. ² There are other

¹ The Associations in Yorkshire and the Humber and the North East Regions predate 1999. See below.

² The number of HEIs in English regions varies from 6 in the North East Region to more than 40 in Greater London. See Table 8.1 p281.

forms of consortia of universities developing at regional and sub-regional levels, and the collaborative mechanisms have taken very different forms in each region.

The chapter investigates the following issues:

- The opportunities and constraints perceived in each of the nine regions in relation to the contribution that universities collaboratively make, and can make, to economic and social development within their region; and
- The different history of collaboration between universities in each region and the impacts that new policy initiatives are making and the future potential for greater impact.

Chapter 5 pointed out that regional innovation systems are emerging in English regions within the UK national and European governance structures. The key question to be asked in this chapter is: to what extent can the collaborative mechanisms between universities emerging within English regions be considered as integral parts of the regional innovation systems? The central issues concern the different forms of networks as *strategic alliances* developed between universities in regions. These include HERAs and other higher education consortia developed through funding from HEFCE and the EU in each region. The relationships developed between RDAs and the universities in regions are also of critical importance in constructing the regional architecture of knowledge economies.

Thus, the chapter analyses the different forms of collaborative mechanisms developed within the different structures in the nine English regions. Applying the strategic-relational approach to networks discussed in Chapter 2, this chapter examines the networks between universities and those between universities and other actors in nine English regions set against the conceptual framework of regional innovation systems (see Chapter 3 p.76). It has to be emphasised that it is not possible in the space

available in this thesis to illustrate the regional networks and partnerships involving universities in much detail in all English regions. Hence, a case study of one particular region, the West Midlands, was made in Chapter 7. The objective of this chapter is to highlight the different processes through which regional innovation systems as collective *strategic contexts* are developing with higher education institutions as regional players/*strategic actors*.

Firstly, the chapter provides an overview of the nine English regions in terms of where and how universities respond collaboratively to the policy initiatives given in a specific spatial and time (the last 5-10 years) context. The chapter looks at each region highlighting its organisational mechanisms and the main areas of activities of HERAs and their links with their RDAs, HE regional collaborative programmes and other regional bodies. Secondly, the chapter identifies different models for a regional approach to higher education engagement as part of regional innovation systems as emerging in England, highlighting the collaborative role played in these by universities. Thirdly, based on the accounts provided of the nine English regions, the similarities and the differences of the institutionalisation processes appearing in the nine regions as organisational fields are clarified. In particular, the differing organisational nature and resources of HERAs, seen as regional strategic actors, are highlighted and four specific areas of ‘strategically selective contexts’ are examined in detail. These are, namely, knowledge brokerage services, skills development schemes, interface development, and inter-regional learning, all taking place increasingly at a regional level. The chapter develops models of universities’ engagement in the regional development processes and makes typologies of university-centred regional innovation systems by way of drawing conclusions from the fieldwork.

8-1 UNIVERSITIES AS PART OF THE COLLABORATIVE REGIONAL ARCHITECTURE

Overview of Collaborative Mechanisms

The Dearing Report (NCIHE) (1997) on higher education stressed the importance of regional collaboration as a means of making universities more efficient and more responsive to regional needs (see Chapter 5, p.166). As Chapter 5 showed, the advent of the RDAs in 1999 has encouraged each English region to have stronger links and partnerships with the universities within its boundaries. According to Benneworth (2001:98), at a regional level, there is a shift in the representation of higher education in these partnerships from it being rather an “ad hoc organisation with a partial coverage and voluntary membership” towards a set of organisations with “more formal constitutions and complete coverage” of regional higher education institutions which can then function as a significant partner to other regional bodies.

As mentioned before many times, RDAs are increasingly encouraged by government to forge links between business and universities. In a collective response to Ministers in July 2000, the RDAs stressed that radical action is needed to incentivise universities to become much more heavily involved in working with business and in developing their regional economies. As a key to this involvement, RDAs see examples in regional alignment of courses and research; in links with business clusters and intensification of HEROBC type activities (HESE, 2000).

HERAs are seen as the creation of a unified voice for the sector in each region in response to the advent of RDAs and other regional governance bodies (see Chapter 5, p.177). HERAs have provided a means of co-operating on research, teaching, and access at a regional scale. Other than HERAs, regional mechanisms of collaboration have been set up for the higher education sector supported by national, regional and European bodies such as HEFCE, the EU, GOs, and RDAs. There are a growing

number of regional higher education partnerships (or collaborative programmes), created for joint bidding for funding to deliver projects. The third stream funding such as that involving HEROBC, UCF, SEC, HEACF and HEIF (see Chapter 4, Box 4.3 p. 128), and the European Structural Funds such as ERDF and ESF (see Chapter 5, p.143) encouraged the formation of such consortia.

Table 8.1 summarises HERAs and some of the higher education collaborative programmes funded by central government (e.g. HEROBC, HEIF, and SEC).³

³ In some regions, the HERAs, programmes funded by HEROBC and HEIF and SECs funded by Scientific Enterprise Challenge have close links, often with the RDAs, whilst in other regions, these bodies and programmes are not well connected.

Table 8.1. HERAs, HEROBC/HEIF and SECs in English Regions as of July 2003

<i>Region</i>	<i>HERAs</i>	<i>Number of HEIs Inc. OU</i>	<i>Major Regional HEROBC, HEIF Outcomes</i>	<i>SECs</i>
North East	Universities for North East	6	Knowledge House; Knowledge North East	North East Centre for Scientific Enterprise
North West	NWUA	16	Knowledge North West	Manchester Science Enterprise Centre
Yorkshire and Humber	Yorkshire Universities	13	Yorkshire Innovations	White Rose Consortium
West Midlands	WMHEA	13	CONTACT; Mercia Spinner; MEDICI (with EM)	Mercia Institute of Enterprise
East Midlands	EMUA	10	East Midlands Incubation Network; MEDICI (with WM)	Nottingham Institute for Enterprise and Innovation
East of England	EEUA	11	Regional Infrastructure for Innovation	Cambridge Entrepreneurial Centre
London	London Higher Education Consortium	40	Knowledge Bridge; Knowledge Technology Networks	*
South East	HESE	25	Hatcheries; SET2 ⁴ (with SW)	Oxford Science Enterprise Centre
South West	HERDA-SW	14	Knowledge Exploitation SW; SET2 (with SE)	Bristol Enterprise Centre

(Compiled from various sources; Information is as of July 2003).

*In London there are 4 Science Enterprise Centres. For detail, see p. 172;

*Some HEIs belong to both the South East and London HERAs.

**For acronyms see glossary and text.

The History of Collaboration, Nine Higher Education Regional Associations and RDAs

In each English region, a HERA has been set up as a formal network at senior management level to provide a forum for all regional HEIs, encouraging and supporting

⁴ Southern England Technology Triangle (SET2) involves 2 HEIs from the SW and 2 from the SE.

joint initiatives and developments. It is pointed out that HEFCE encouraged regions to form such associations. With the Restructuring and Collaboration Fund providing matching funding of £25,000 per year for 3 years from HEFCE, all English regions established such consortia by 2000. HEFCE and Universities UK undertook a research project to map the benefits of higher education to their host regions (Universities UK/HEFCE, 2001a).

Interestingly, it seems each association has followed its own institutional evolutionary pathway whilst all of them have common constituencies, similar origins and remits and face similar challenges. Each Association acts as the interface between the individual institutions and their regional partner bodies, and acts as the representative body of higher education in the region. The nature of each HERA is defined by the political economy of the region, evolving relationships between universities and the RDA, the interests of individual HEIs and their regional partners, the external resources available for each Association as a collective body at a specific time, and their networked relationships with other stakeholders in society at large.

In terms of history, there are two early exceptions to the general picture in England. In the North East Region in England, the original regional consortium of the universities was set up as early as 1983. In Yorkshire and the Humber, a university association was formed in 1993. It is worth examining the development of these two earlier organisations in detail (see below) . Although there were a number of universities making some kind of groupings within their regions, the other seven English regions didn't have a formal regional mechanism of collaboration among universities until 1999/2000, when the advent of RDAs and HEFCE funding pushed every region into establishing an association of higher education. Generally, in all regions, areas where

European Structural Funds are available (e.g. Objective 2 and 3 areas) have longer traditions of collaboration.

The following inter-related themes are taken into account when considering the nine English regions:

1. History of regional HE collaboration and development of HERAs;
2. Strategic co-ordination within regional innovation systems such as links between RDAs and HERAs; links between HEROBC, HEIF and SEC programmes; and
3. Universities and the knowledge economy in a multi-level governance structure.

It is not possible to illustrate networks and partnerships involving universities in different areas (e.g. teaching, research, and third stream activities) in each region in detail. The aim of this chapter is to shed light on the different *strategic contexts* and *strategic actions* emerging in different regional structures as illustrated in Chapter 5, especially in relation to universities as strategic actors influenced by higher education policies, specifically those promoting third stream activities as discussed in Chapter 4.

The following section compares nine English regions under the theme of universities and the evolution of regional innovation systems in the MLG structure of the knowledge economy. In Appendix 8.1, chronological tables listing the sequences of events in each region are presented.

Universities and the Evolution of Regional Innovation Systems in the MLG Structure of the Knowledge Economy

The North East Region

As already mentioned, the North East Region⁵ has the longest history of regional university collaboration. The number of universities in the Region is relatively small (5 universities plus a branch of the Open University). The Region has over 60 years experience of industrial decline and regional policies. Consequently, it has built up 'regional feeling', action groups and, political lobbying strengths, which are lacking in other English regions. The North East Region seems to provide a model of a well developed university-based MLG collaboration mechanism in the Region.

One of the important structural factors is the long partnership developed through European Structural Funds. Another important structural factor behind the university collaboration in the North East is that central government is encouraging the universities in the Region to collaborate as a model of regional HE collaboration.⁶ The mechanism of university collaboration predates the Dearing Report (1997) and the advent of the RDA (1999). Higher Education Support for Industry in the North (HESIN) was established in 1983 by the five Northern universities and the Northern Region of the Open University, acting through an executive committee of its members drawn from

⁵ The regional economy of the North East Region is characterised by the under performance of the Region's economy, relative to the rest of the UK. North East is weaker than most other regions in terms of employment in high value added activities, and the region has current low productivity. Business spend on R&D (as a share of regional GDP) is 33% below the corresponding national figure (ONE 2001). The role of university R&D occupies a significant part of regional R&D. The rate of new business start ups continues to lag behind the national average. The employer base continues to show signs of weakness, especially in manufacturing, and manufacturing's employment picture is due in large part to a combination of low skill branch plants and relatively unsophisticated SMEs (CURDS 2000).

⁶ For example, NCIHE (1997) (the Dearing Report) highlighted Knowledge House in its discussion of the regional role of universities and knowledge transfer.

"In England, in the North Eastern region, which is probably typical of the more proactive clusters of higher education institutions, there has been a distinctively regional as well as local approach to research and consultancy support for industry. ... To provide an easy point of access for small firms to all the universities of the North East they have established a 'Knowledge House', which is financed by the universities of the region, the Open University and the European Regional Development Fund (ERDF)" (NCIHE, 1997, 12.15).

Pro-Vice Chancellors.⁷ In 1999 it was re-launched as Universities for the North East (Unis4ne) with a broader remit. The drive for this change was led entirely by the universities themselves.⁸ The launch was coterminous with that of the RDA, One NorthEast (ONE) with whom a Compact highlighting joint objectives was signed. The strap-line for the new association is “a resource for the Region”.⁹

In its Regional Economic Strategy, ONE states that one of their objectives is to “place universities and colleges at the heart of the region’s economy” and it devotes one specific section to the role of the universities in the Region (ONE, 1999).¹⁰ It is argued that universities in the North East of England make an important contribution to the regional innovation system, particularly given the relatively low levels of government-funded R&D in the region (Universities UK/HEFCE 2001 c). ONE works as a significant catalyst linking universities’ knowledge and regional institutional partners through its Centre of Excellence, NorthStar¹¹, and Science and Industry Council.¹² The

⁷ It was established as a collective endeavour to meet some of the problems of the Region through industrial training and technology transfer activities. It became more established with the support of European Structural Funds and a range of specific networked projects during the 1990s.

⁸ Previously HESIN was governed by an Executive Committee comprised of Pro-Vice-Chancellors, but reflecting the increasing significance of the regional dimension to universities work, a new executive group, the Board, comprising the Vice-Chancellors was formed.

⁹ Unis4ne’s main objectives, as defined in the Memorandum, are to:

- provide a means whereby the Members may co-ordinate their regional activities and identify opportunities for collaborative action so as to maximise their contribution to the social, economic and cultural life of the NE of England and develop partnerships with business, industry and public bodies;
- carry out such joint activities or collaborations within the Region with Members and/or non-members as shall be agreed by the Members in accordance with the terms of their Memorandum.

[based on notes from Unis4ne Secretariat].

¹⁰ The concept of the “learning region” (see Appendix 3) is employed in relation to the role of universities bridging knowledge into the Region. In their Regional Economic Strategy, one of the strategies is “Exploiting the Research & Technology Base”. This includes helping regional companies to innovate through technology transfer within and between universities and companies regionally, nationally and internationally; incubating new SMEs through entrepreneurship creating spin-off companies; and increasing private sector R&D by maximizing investment; attracting science and technology investment to the region and by the use of existing facilities, regionally and nationally (ONE, 1999).

¹¹ NorthStar was created by ONE as a licensing company building on the activities of a SEC funded by NECSE. They provide commercial expertise & access to finance and customers, manage and exploit intellectual property, act as bridge to traditional centres of venture capital as well as providing finance including proof of concept.

ONE Head of External Relations is tasked with liaising with Unis4ne Board members and a range of other personnel from the HE sector.

Unis4ne plays a central role in a number of ways through Knowledge House as knowledge brokerage between SMEs and universities, and in implementing the regional new collaborative HEIF programme with strong initiatives and links with senior management of universities.¹³

It is interesting to note that as of December in 2002, no RDA money goes to Unis4ne.¹⁴ Most of the RDA money that universities draw comes from sub-regional groupings in the four sub-regions. Also, there is a lot of collaboration involving universities in the Region which is not budgeted as Unis4ne. The need for further collaboration between ONE and Unis4NE communicating between regional strategies and sub-regional programmes seems to be one of the issues in developing a further MLG structure for the regional innovation system in the North East. This development needs to be located within a wider national picture of regional disparities in the knowledge economy.

¹² ONE has established “the Regional Science and Industry Council” which is guiding the regional efforts to exploit university-based R&D. This is achieved through the five new Centres of Excellence which cover the following fields: renewable energies, process industries, life sciences, digital technology and nanotechnology. As part of the aim of establishing Centres of Excellence and commercially developing university based research each facility is being linked to a business cluster.

¹³ Regional innovation issues and areas for potential collaboration are discussed through the Business and Enterprise Committee of Universities for the North East. This group comprises all of the relevant directors of technology transfer/commercial services from each university and its remit includes reach out activities, Knowledge House, regional Teaching Company Scheme collaboration, intellectual property exploitation and spin out. Furthermore, the new HEIF programme, *Knowledge North East*, brings the activities of universities and RDA together.

¹⁴ The Secretariat funding is around 30 per cent of the subscription and 70 per cent project re-charges which is recovered by ‘selling’ their management and administrative services [notes based on interview, December 2002].

Yorkshire and the Humber

Yorkshire and the Humber¹⁵ is the Region which saw the second earliest establishment of a HERA in 1993, by the Vice-Chancellors of the nine regional universities to co-ordinate their economic impact on the Region. This university association for the Region developed gradually and became formally established as the regional representation of higher education in 2000.¹⁶

The collaboration of the higher education sector in Yorkshire and the Humber has a dual structure. One is the White Rose Consortium, between three research-led universities;¹⁷ the other is Yorkshire Universities, a formal representative mechanism of all higher education institutions in the Region. There is a strong link between these two,¹⁸ and the RDA is working with both of them as part of the Regional Economic

¹⁵ The economic output of Yorkshire and the Humberside is over £55 billion; 7.4 per cent of the total UK GDP. The sub-regions vary, with South Yorkshire producing around three-quarters of the UK average GDP per head. The most economically successful part of the region is North Yorkshire. Most industrial sectors have been growing in line with the average for the UK with the exception of mining and quarrying, which have been in decline. Unemployment in the region is 6 per cent compared with an average of 5.2 per cent for the UK. The total income of higher education institutions in the Region is just over £1 billion per year. The economy of Yorkshire and Humberside is driven by the dual pre-eminence of the cities of Leeds and Sheffield, each of which has a strong, locally-dominant research university. This may have hindered the development of broad regional links either by Leeds or Sheffield Universities, each preferring to concentrate on their locality/county (Benneworth, 2001:101).

¹⁶ The association became a company limited by guarantee in 1997 in order to access grants from government agencies without having to do it through an individual member institution. This enabled collaboration on projects managed through “an independent honest broker” [notes from Yorkshire Universities Secretariat, July 2003]. In December 2000, the higher education colleges in the Region were invited into membership of the Yorkshire and the Humber Universities Association, and in 2000, the YHUA was designated as a formal regional association of higher education sector as a partner to other regional bodies. Now named Yorkshire Universities, the Association benefits the Region through giving a single point of contact between the region and the higher education sector. Yorkshire Universities, trading as YHUA Ltd, is a company limited by guarantee.

¹⁷ The White Rose Consortium was set up between the three most research-intensive universities, Leeds, Sheffield and York. It started in 1997 very informally with meetings of the Pro-Vice Chancellors for Research from the 3 universities. From these meetings and subsequent projects the venture has grown and in 2001 employed a full time chief executive. In 1996/7, these three universities accounted for 84 per cent of the research income of the 9 regional universities and three higher education colleges. It was felt appropriate that more could be achieved through collaboration of these alone. The White Rose made the successful Universities Challenge Fund bid. The Consortium works very closely with Yorkshire Forward and, the White Rose Consortium is named explicitly in the Regional Economic Strategy. The Consortium helps to inform the RDA's strategy and the RDA supports many of the Consortium's projects.

¹⁸ The White Rose Consortium works with Yorkshire Universities wherever possible, and included Sheffield Hallam in the White Rose Consortium bid for the regional centre (Yorkshire) of the National Network of Science Learning Centres, and the regional centre will be based at Sheffield Hallam [notes from the White Rose Consortium Secretariat, July 2003].

Strategy. Yorkshire Universities is engaged in the development of all regional strategies on behalf of its members and is closely linked with Yorkshire Forward, the Yorkshire and Humber Assembly and Government Office for Yorkshire and the Humber [notes from Yorkshire Universities Secretariat July 2003]. Yorkshire Universities incorporates long existing networks of Heads of the Career Service, and graduate retention is being addressed through a project called Graduates Yorkshire.

The strategic context of HE collaboration in the Region is characterised by the combination of the dual MLG structure of the regional innovation system: the research-led universities consortium which is linked to national University Challenge and Science Enterprise Challenge, and the regional HE representative body which represents the collective interests of all HE in the Region and works closely with European supported RIS, also handling ESF programmes.¹⁹ A project called Knowledge Rich is being developed between Yorkshire Forward and HE in the region as a knowledge brokerage service, but Yorkshire Universities is not involved in this.

Yorkshire Forward, the RDA, based on its *Science Base Strategy*, has set up Centres of Industrial Collaboration based on university expertise.²⁰ Combined with the regional scientific capacity building led by the RDA, the development of Yorkshire and the Humber university-centred regional innovation system seems to provide a model in the light of collaboration between so-called ‘research-led’ and ‘less research-intensive’ universities within the region.²¹

¹⁹ “Member institutions are not compelled to collaborate on all projects as they may not be appropriate, however all collaborative projects are essentially for the benefit of the Region” [notes from Yorkshire Universities Secretariat, July 2003].

²⁰ These centres aim to “raise the economic performance of Yorkshire and the Humber in five key industry clusters by placing our eight universities at the heart of economic development”. [12 May 2003, Science Exploitation Manager, Yorkshire Forward].

²¹ For individual higher education institutions, there is a clear rationale for the collaboration in the Region. The contrast between the higher education institutions in the Region is clear. Leeds, Sheffield and York are “internationally active research universities” and Leeds Metropolitan, Sheffield Hallam and Huddersfield tend to serve “a more local, more frequently part-time and vocational market”. The

The North West Region

The North West is geographically divided between heavily urbanised centres and the more remote and beautiful hinterland.²² The creation of the North West Universities Association (NWUA) in 1999 has enabled the universities of the North West to work collectively and closely with industry and regional agencies.²³ NWUA's flagship project, KnowledgeNorthWest, is the regional portal linking business with North West universities' expertise. It is supported by North West Development Agency (NWDA), ERDF, and HEFCE. The aims and objectives of KnowledgeNorthWest resonate strongly with the goals set for the Region in the Regional Strategy and the Regional Innovation Strategy.²⁴ KnowledgeNorthWest has got a contact person at each HEI following the Knowledge House model in the North East.²⁵ Much is already being done to build links between graduates and business. Over 40 companies and graduates have been involved in the Teaching Company Scheme over the past year, helping to

framework allows each institution to contribute in its own area of excellence, whilst giving the necessary co-ordination to permit fine-tuning of provision through grant awards to Yorkshire Universities, who can meet the shortfall as a collective body (Benneworth, 2001:101-2).

²² Nearly one third of the population in the Region live in Greater Manchester and almost two-thirds live and work in the Mersey belt. The economic output of the North West is around £70 billion, which is 10.6 per cent of the total UK GDP (Universities UK/HEFCE, 2001d:10).

²³ There was a separate association called Higher Education North West representing seven higher education colleges. Since January 2003, NWUA enlarged to include the higher education colleges, and now has 15 full members and one associate member.

²⁴ KnowledgeNorthWest aims to overcome one of the main problems facing companies, particularly small ones, which is simply knowing how and where to make contact with the relevant people in universities and higher education colleges. By working closely with the Small Business Service (potentially its largest client group), KnowledgeNorthWest aims to significantly improve the reach-out from HEIs to SMEs.

²⁵ KnowledgeNorthWest offers a free enquiry service, which can be accessed not only via the website www.KnowledgeNorthWest.com, but also via e-mail, fax or telephone. The user-friendly website, KnowledgeNorthWest.com, is, however, the ideal place to start if you are an SME looking for help developing a new idea, or wish to discuss the latest advances in technology with staff at the Region's HEIs. A rapid response is guaranteed with most enquiries answered within five working days, unless the client specifies otherwise. During its six-month pilot phase, enquiries ranged from specific requests for information about specialist fabrics to market research, and 70 per cent of these received one or more responses from North West HEIs.

maximise the skills of high calibre graduates and facilitate technology and knowledge transfer to companies.²⁶

The North West Region was the first English region to establish a Regional Science Council in 2001(see Chapter 5, p.179-80) bringing together representatives from industry, regional agencies and the universities to lobby on behalf of the Region and advise and launch the Regional Science Strategy (NWDA, 2002b).²⁷ In the submission to the North West Science Council, which reads, “Developing and using the HE Research Base in the North West to enhance the global competitiveness of business and industry in the region”(2002b),²⁸ NWUA proposes a strategic model of networking. NWUA is developing a model of an ‘academic cluster’, which is an interactive model linking KnowledgeNorthWest, RES sector/cluster groups and research groups in universities grouped as ‘academic clusters’.²⁹ It aims at enhancing networks between academic clusters and RES cluster groups and at forming spin-out companies.

In terms of the MLG structure of the knowledge economy, the North West provides an example of bottom-up regional policy, even if sometimes frustrated, initiatives in relation to national science and industry policies.³⁰ The Regional Science Council brings together the key stakeholders including universities at the strategic level. NWUA has acted as a main strategic actor not only representing HE in the Region but also implementing strategic programmes in the field of skills development and linking

²⁶ Work underway in the Region to improve skills levels and access to employment opportunities includes the ‘Graduates Into Employment’ Unit, run by Liverpool University. The Unit works closely with businesses to define their recruitment needs and skills gaps via a graduate placement programme – the biggest of its kind in Europe.

²⁷ This was subsequently published in 2002 and sets forward cluster-based actions in five priority areas (biotechnology, environmental technologies, chemicals, aerospace and nuclear energy) to link universities better with industry and regional partners.

²⁸ http://www.northwestscience.co.uk/strategy/downloads/NWSC_04_05%20NWUA%20submission.pdf 26/07/03.

²⁹ The NWUA has identified leading academics in the North West to act as contact points for the particular industrial sectors identified in the Regional Strategy.

³⁰ As illustrated in Chapter 5, the RDA and the universities worked closely together to try to keep Diamond in the North West Region (see Perry, 2003).

academics to industry.³¹ The RDA has supported the merger of University of Manchester and UMIST, to create ‘a world class’ university in the Region.³² There is an issue about the relationship between the regional and sub-regional levels and between Greater Manchester³³ where a number of universities are concentrated and working closely together on new initiatives and other parts of the Region. The European Programme was developed and is operated by the CONTACT Partnership on behalf of the Region’s HEIs in accordance with a decision of the NWUA Board.³⁴ Thus, the North West Region provides an evolving model of a university-based regional innovation system which strategically links regional strategies and institutional interests set within a MLG structure of the knowledge economy.

The East Midlands

The Association, East Midlands Universities Association (EMUA), was formally established after the Vice- Chancellors had a meeting and decided to form an association in the East Midlands. A Head of Secretariat was employed from November 1999.

The East Midlands developed regional institutional networks where EMUA, in collaboration with East Midlands Development Agency (EMDA), plays a central role in

³¹ However, there are some perceived tensions between individual HEIs, the Association and the RDA [personal communication, AURIL conference, March 2003].

³² The Science Strategy aims at having a world class university in science and technology, thus offering support for ‘Project Unity’, the merger between Manchester Victoria and UMIST.
<http://www.thecontactpartnership.ac.uk/The%20Knowledge%20Capital/SURF%20final%20report.pdf>
access date 25/09/03.

³³ One proposal is to create an internationally acclaimed “Knowledge Capital” within the Greater Manchester conurbation which positions Greater Manchester, branded as the Knowledge Capital, at the heart the knowledge economy, significantly contributing to the regeneration of the North West region leading to a vibrant, safe, healthy and attractive environment in which to live, work and play, for people of all ages, social and cultural backgrounds.
<http://www.thecontactpartnership.ac.uk/The%20Knowledge%20Capital/The%20Knowledge%20Capital.pdf>
access date 25/09/03.

³⁴ The CONTACT Partnership has been awarded £39.4m of ERDF to enable the Region's Universities to assist SME's, through incubation, innovation and knowledge transfer, and thus contribute to the regeneration of the North West Region.

linking individual HEIs, the SEC, and HEIF projects together.³⁵ Principally EMUA works closely with EMDA on the innovation agenda. HEIs are pro-active in relation to EMDA's innovation strategy, forming a regional HE strategy. EMUA is giving administrative support to the East Midlands Science Enterprise Network (EMSEN), which is funded by Science Enterprise Challenge, with the catalytic and enabling role played by EMDA.

In particular, the University of Nottingham Institute of Enterprise and Innovation links its expertise in enterprise into the Region bringing in its global networks. Many third stream projects started off with a small number of institutions and gradually have enlarged to include a larger number of regional HE institutions. EMDA introduced a new structure of strategic sub-regional partnerships. EMUA and EMDA as regional organisations serve as the core of the MLG structure of the innovation system emerging in the Region. Funded by EMDA, EMUA has been conducting research on the 'research expertise and innovation potential of higher education' in the Region.

The West Midlands

Chapter 7 provided an outline of the Region. As discussed in Chapter 7 (p.252), in the West Midlands, there had been a long tradition of having an informal network of Industrial Liaison Officers (ILOs) within the Region, reflecting the universities' working relations with local businesses. However, there was no formal mechanism of regional collaboration at an institutional level. In the late 1990s, the WMRIS, which had

³⁵ Under HEROBC II, the Universities of Nottingham, Leicester and Loughborough took collaborative actions to establish and co-ordinate an Innovation Fellowship Fund releasing individual staff to pursue commercial opportunities and interactions with business, and a Regional Fellowship Fund to support the strategic activities of regional agencies. A Regional Co-ordinator supports research collaborations. Six of the East Midlands HEIs were successful in bidding for HEIF money of £3,037m towards an East Midlands Incubation Network. The network develops effective support for incubation of new businesses in the Region through strong regional networking, co-ordinated and supported by central services. It supports a wide range of clients including pre-start and early stage businesses, incubator and business support practitioners, research groups, private sector business professionals and investors.

the support of the funding from the European Union, served to initiate regional partnerships including the private, public and higher education sectors.

The WMHEA was established in September 1999 with financial support from HEFCE to provide a focus for the regional activities of the 12 (then, since August 2002, 13) West Midlands HEIs. The WMHEA has been one of the last to be developed and has been the smallest in terms of its central management team. In collaboration with GOWM, WMHEA coordinates ESF regionally.

The West Midlands is characterised by a very 'regional' approach in its collaborative bidding for national third stream initiatives. It has more regional collaborative third stream programmes than any other region in England, and there are synergetic effects between those programmes but, so far, there seems to be not much horizontal strategic coordination made between these separate collaborative initiatives.

³⁶ AWM, the Regional Development Agency, launched a business cluster action plan in early 2003 and, through WMHEA, Cluster Innovation Managers (CIMs) covering 10 main sectors have been appointed (see Chapter 7, p.260). The RDA has worked as a strategic catalyst and makes financial support to a number of regional and sub-regional HE initiatives, with the link between the RDA and WMHEA growing recently. The idea of a Science and Technology Council for the West Midlands has been discussed over the first part of 2003 by WMHEA. ³⁷

WMHEA is a senior member of the West Midlands in Europe, the office established in Brussels representing the interests of the Region in relation to the EU (see Chapter 7, p.229). Another significant European link is through the SAIL programme, which promotes university-industry links with partner regions in Europe (see Chapter 7,

³⁶ See Chapter 7, p.261 for references to CONTACT, MIE and Mercia Spinner schemes.

p. 245). The case of the West Midlands provides another MLG model of HE-Region relationships. It is the combination of the European, national third stream funding and regional initiatives and networks that has enabled the rapid development of the regional innovation system in the West Midlands. The collaborative mechanism emerging in the West Midlands so far comprises a number of co-existing weakly-connected webs of networks.

The South West Region

In the South West,³⁸ the HEIs took the initiative to set up a regional HE association with the support of the Government Office in the Region and the RDA, who encouraged the HEIs to form a single regional body.³⁹ Prior to the establishment of the Association, there were some regional groups and activities already underway, such as the Heads of Careers Services group and the group involved in delivery of the regional widening participation projects, involving all SW HEIs and the FE sector. In August 1999, the Higher Education Regional Development Association SW (HERDA-SW) was created and its constitution finalised.⁴⁰

The HERDA-SW secretariat co-locates with the RDA, The South West of England Regional Development Agency (SWRDA), and they have a close working relationship. Thus HERDA-SW has a strong commitment to economic and social development. Its strategic plan strongly complements the aims of the regional strategy

³⁷ Foreseeing the second round of HEIF starting from 2004, new strategically integrated mechanisms of regional HE collaboration system are under construction as of July 2003[informal communication with Regional Industrial Collaboration Manager].

³⁸ The South West of England is home to nearly 5 million people. The economic output of the South West is just over £56 billion-7.6 per cent of the total UK Gross Domestic Product (GDP). The most economically successful parts of the region are the north and east, where high technology, financial and industrial companies are based; South Gloucestershire is an important centre for the aerospace industry. Further southern and western areas, together with rural areas, have suffered from a decline in traditional industries such as fishing, tin mining and china clay (Universities UK/HEFCE, 2001e:12).

³⁹ In June 1999, part of the Higher Education Regional Development (HERD) Fund was used to hold a conference to agree to form an association.

in areas such as: strategic partnership and policy development; business support and development; employability development; graduate retention and lifelong learning; widening participation; local economic regeneration; information and communications technology infrastructure; and regional intelligence (Universities UK/HEFCE, 2001e: 25).

The head of the Secretariat of HERDA-SW commented that, although the RDA and the Association has close links, the RDA has not recognised what higher education does for the Region and not fully exploited the potential of the region. In November 2001, HERDA-SW commissioned a report on the economic impact of higher education on the South West Region.⁴¹ The report says:

Regional bodies should recognise that the region's HEIs, as economic organisations, are both in competition and co-operation with each other. This can create conflicts of interest for the HEIs when they are both competing with each other (for students, for research contracts and for the supply of services to regional employers) and being exhorted by central and regional government agencies to work in partnership. The significance of these twin tendencies in determining the managerial and operational needs of HEIs needs to be examined, learnt, monitored and reflected in the work of regional agencies (HERDA-SW, 2001).

With HEROBC funding, University of Exeter, in consultation with all HE members of the HERDA-SW, created a programme (The Fulcrum Project) which focuses on the development, accreditation and delivery of professional development and on support for the Region's HE staff who have responsibility for reaching-out to business and the community in the Region.⁴² With HEIF, HERDA-SW has co-ordinated (with Exeter University as a lead organisation) proposals for 3 year programme called Knowledge Exploitation SW (KESW). This links regional HEIs and business service providers such

⁴⁰ Prior to setting up the Association, a study visit was made to both the North East and Yorkshire and the Humber to look at the systems there.

⁴¹ "This would clearly demonstrate to the RDA and others the value of the HE sector and its economic significance." [based on notes from correspondence with the Secretariat].

as SBS and SW-MAS (Manufacturing Advisory Service), to improve the regional co-ordination of HE services to business. The programme also aims at generating new business opportunities from universities through entrepreneur development and proof of concept fund projects.⁴³

The regional higher education collaborative mechanism has largely developed from third stream funding such as HEROBC and HEIF, and has established region-wide programmes to build up the economic and social capacity of the Region. Science Enterprise Challenge, on the other hand, is run by a single institution, the University of Bristol, but two other universities are involved (see Appendix 5.2).

In terms of the development of the MLG structure of South West's innovation system, institutional collaboration at a sub-regional level has been significant and is expected to increase. Building trust among partners at regional level, and making HE institutions appreciate the longer term regional benefits rather than just short term individual benefits are seen as the keys in enhancing further collaboration [based on notes from interview, HERDA-SW secretariat, November 2002]. Some trans-national links between regions with an interest in the role of universities are being built, and this is seen by HERDA-SW as one of the important areas to be developed in the future.

The East of England

In the East of England,⁴⁴ the HE landscape is characterised by the existence of one big dominant research-led university of international excellence, the University of Cambridge, and other nine HEIs with smaller scales of research and income. A regional

⁴² This includes production of end-user piloted modular learning programmes and the creation of a Regional Support Network engaging with regional partners.

⁴³ http://www.unisdirect.com/conference/programme/presentations/sean_fielding.pdf 26/07/03.

⁴⁴ East of England is the fastest growing economic region in the UK with 70 per cent of national high-tech employment and Cambridge as the hub of the regional economy. In 1998, there were some 37,000 high technology jobs (11 per cent of all jobs) in the Cambridgeshire labour market (Cooke, 2002:145). The Region consists of six counties: Cambridgeshire, Norfolk, Suffolk, Essex, Hertfordshire and Bedfordshire.

higher education association was started off by a meeting of Vice-Chancellors with encouragement from HEFCE.⁴⁵ The resulting Association of Universities in East of England (AUEE) is “a membership organisation and it exists to serve and advance the interests and missions of its members” (AUEE, 2002:2). The Secretariat of AUEE was formally started in October 2000 with the appointment of an Executive Director.⁴⁶ AUEE has built a close relationship with EEDA, the RDA, and they both have offices in the same location.⁴⁷

The Region has a very strong science and technology base, and the highest R&D expenditure in the UK as a proportion of GDP. There are a number of centres of research and science parks with links to the University of Cambridge. These include Cambridge Science Park set up in 1971 by Trinity College, and St John’s Innovation Centre set up in 1987.⁴⁸ Cambridge is well known for the growth of its high-tech sector with links with the University, and the University has attracted a number of foreign research institutions to the area.⁴⁹ There are a number of ‘embedded laboratories’

⁴⁵ There were no pre-existing regional collaborative bodies except for a few groupings dedicated to specific purposes such as a teachers’ education consortium and an enterprise in HE programme [interview, June 2003].

⁴⁶ AUEE has continued to have a minimal secretariat’s management structure (The Executive Director works for 4 days a week with an administrative staff seconded from a university) but its activities have been growing. The AUEE secretariat remains minimum partly as deliberate policy. “The purpose is not to grow itself, but to support development inside universities” [Interview, June 2003].

⁴⁷ EEDA states in *East of England 2010: prosperity and opportunity for all* that “building relationships between universities and businesses is vital to enhance the transfer of knowledge” (2001:59) and adds that “a priority for the East of England must be to capitalise on the talent available in our universities for the benefit of the whole region.” (2001:96).

⁴⁸ Other science parks are: Granta Technology Park, Abington, Babraham Incubator, Melbourne Science Park, Peterhouse Technology Park, Cambridge Research Park and High Cross site. Centres of research includes Wellcome Genome Campus, MRC Centre for Brain Repair, Babraham Institute (Biomedical), Addenbrookes, Papworth Hospital, NIAB and Laboratory of Molecular Biology.

⁴⁹ The Cambridge pharmaceutical and biotech cluster has been successful and is seen as the template for ‘clusters’ across England. The Greater Cambridge Area has a mix of spin-outs, new ventures and UK subsidiaries of multinational firms. EEDA and its support organization Invest East of England opened an investment office in Silicon Valley in 2002 to attract greater investment into the East of England’s high tech environment. See a report by PACEC (2003), *Cambridge Phenomenon: Fulfilling the Potential*.

benefiting from the physical proximity to the research departments of the University, conducting collaborative projects.⁵⁰

EEDA mentions that “the Institute of Manufacturing in Cambridge is one example of the use of university expertise to help improve business competitiveness.” and also mentions a second example, “a strategic alliance between the University of Cambridge and the Massachusetts Institute of Technology (MIT) [which] has created the Cambridge-MIT Institute”. For the East of England, the existence of the University of Cambridge with its research excellence and its recent alliance with MIT is enormously significant. This alliance allows East of England businesses to take advantage of expertise and knowledge from both universities (2001:10).

The University of Cambridge bid for HEIF on behalf of all the other HEIs in the Region and established the Regional Infrastructure for Innovation (RII). RII is to capitalize on the opportunities for knowledge sharing and collaboration amongst the Region’s HEIs, local business and industry, in order to create wealth through supporting and enhancing the processes of technology transfer and innovation. The project has been planned and coordinated with several regional agencies including EEDA, the Government Office for the East of England (GO-EAST), and AUEE.⁵¹ It aims to contribute to meeting the regional economic objectives specified in EEDA’s RES and, contributes to the Regional Innovation and Technology Transfer Strategy (RITTS) strategic objectives and action plan, a project partly funded by the EU. The project is coordinated with other regional HEI initiatives including the Science Enterprise Challenge and the University Challenge funds.

⁵⁰ For example, Glaxo Wellcome (Pharmacology and Biochemistry), Unilever (Chemistry), Microsoft (Computing), Hitachi (Physics).

⁵¹ It has also been coordinated with and receives support from several regional network and business support groups including the Small Business Services, The Cambridge Network, IP-City, The Suffolk Network and Techlink.

The East of England Region has developed the MLG structure of its regional innovation system centring on the University of Cambridge with its global research excellence and its global alliance with MIT which is supported by central government (see Chapter 4 p.130). Cambridge's development of high-technology industry and the wide variety of initiatives supporting the commercialization of the science/technology base for economic development has been a 'role model' of local economic development in the UK (see Greater Cambridge Partnership, 2003; see also PACEC, 2003). EEDA, is trying to develop wider regional mechanisms of economic growth and, along with AUEE, one of their regional aspirations is to tap into the wider resources of higher education in the Region.⁵²

The South East Region

In the South East Region, Higher Education South East (HESE) was established in September 1999 as a new network amongst higher education institutions in the Region, and was made a company by guarantee.⁵³ HESE serves as a regional representative of HE voices, and work closely with the Regional Assembly and other regional partners.⁵⁴

The South East is seen as a knowledge-based economy and the university sector is well placed to support that knowledge base (Universities UK/HEFCE, 2001 f).⁵⁵ The

⁵² For example, in 2003, EEDA is supporting a project on the Regional Graduate Labour Market bringing together labour market researchers from five of the Region's universities based on the recognition that many graduates leave the Region to take employment in London. This would be complementary to strategies set out in FRESA, which HE is represented through AUEE. See below the section on FRESA.

⁵³ The South East Region has adopted a very formal approach to the structure of the regional higher education collaborative mechanism. This is due to the large number of institutions (25 HEIs) and the large geographical area and their variety. Although fairly new to the Region, the collaboration between universities, and between universities and their regional partners has developed rapidly. HESE has a board and company form, but it is a non-profit independent organisation. HEFCE Regional Advisor for the Region sits on the board of HESE.

⁵⁴ When the report was commissioned from HEFCE in collaboration with Universities UK through the Centre for Urban and Regional Development Studies, the newly created HESE conducted a detailed study which provided the opportunity for conducting a "resource inventory exercise" mapping out the experience and expertise of the 25 institutions in the region to provide information to regional partners (Universities UK/HEFCE, 2001f:8).

⁵⁵ The South East Region has a population of 8 million, an estimated GDP (2002) of £140 billion, and contributes a net £17 billion to the Treasury. SEEDA's annual budget (2002-3) is £110 million. The

Science and Technology base in the South East is very strong: total R&D expenditure taking place in the region's universities, research institutes and businesses, is £4,114 billion or 24 per cent of the UK's R&D expenditure.⁵⁶ The concern of the Region is how to sustain the strongest manufacturing economy in the UK regions, that spread around the periphery of London and connected to the continent of Europe via the Channel Tunnel.⁵⁷ The existence of research universities such as Oxford with research/science parks works to attract further international links.

HESE contributed to the first draft of the revised RES, and SEEDA decided to focus significant single pot funding in areas of direct interest to HE such as Hatcheries aimed at exploiting the science and research base encouraging innovation and Enterprise Hub. The first phase of Enterprise Hub focuses on research and teaching, which is very relevant to HESE.⁵⁸ The increasing importance of SEEDA's work with HE both bilaterally and regionally led them to appoint an HE liaison manager who

manufacturing base is strong - the South East exported nearly £28 billion worth of manufactured goods in 2000, more than any other region. Many major companies locate their European headquarters along with their R&D in the South East. The SEEDA Region performs very well in international comparison with regions of a similar size. Within the top 40 global regions performance the region performs in the top 10 on knowledge economy indicators such as R&D expenditure. However labour productivity is 22.6% below the top performing average and the region ranks 35th out of 40. If the Region is to maintain and improve its competitive position internationally, reaping the full benefits of its research base – research corporate sector, public sector and university-based, must be a priority.

http://www.seeda.co.uk/corporate_statements/docs/House_of_Lords_SEEDA_Submission-Feb2003.doc
access date 26/07/03.

⁵⁶ As a proportion of GDP, this is second only to that of East of England. In the 2001 RAE exercise 45 departments gained 5* ratings, with the University of Oxford alone gaining a 5* rating in 25 departments. London and the SE together account for 38 per cent of HEI research income.

⁵⁷ SEEDA's initial response to the Lambert Review of Business-University Collaboration (17 April 2003) stated:

“Good examples of business-university collaboration do exist, and these can be transferred. It is one of the Regional Development Agency's functions to identify and promote best national and international practice in the various aspects of knowledge transfer. SEEDA gives high priority to promoting this through its activities and programmes, for example, using its global regions partnering strategy to identify and then disseminate best practice in promoting business-university interactions”.

<http://www.lambertreview.org.uk/pdf/rdaseenglandjeffalexander210403.pdf> 26/07/03.

⁵⁸ Drawing on international examples more generally, SEEDA's Enterprise Hub concept won European recognition in 2002 as a best practice example of support for new business in Europe through the European Association of Development Agencies Benchmarking Project. Enterprise Hubs have been developed and pioneered by SEEDA as one of its initiatives to increase the start-up survival and growth rate of young companies, with a particular focus on links with universities.

works developing both skills and business related activity with HESE and individual HEIs.

The South East's spin-off agenda is dealt with by individual universities and the Science and Enterprise Centre is organised by an individual institution unlike some regions which take a more regional approach (e.g. North East, West Midlands, East Midlands). However, recently, more collaborative approaches are being taken both regionally and inter-regionally.⁵⁹ In February 2003, in response to encouragement from Lord Sainsbury to form Science and Industry Councils, the South East Science and Technology Advisory Council (SESTAC) was formed with membership which includes senior industrialists and Vice-Chancellors. It is chaired by the Vice-Chancellor of Southampton University.

This provides another model of the MLG structure of the regional knowledge economy whereby universities increasingly play a significant role. Being the strongest manufacturing region in England, the South East Region is positioning itself within the global knowledge economy with inter-regional and international links with the headquarters of multinational firms. Through international links and its interlinks with London and other regions, SEEDA, the South East RDA, is growing its link with universities.⁶⁰

⁵⁹ Funding of £11.5 million from HEIF 2001 will enable the consortium universities-Bath, Bristol, Surrey and Southampton-to establish a Regional Centre of Excellence for Technology and Innovation in Southern England, endorsed by the South East and South West regional development agencies. The largest single award of £5 million will set up a network of centres for the development of high-tech, high-growth businesses, to support 1,000 budding entrepreneurs over the first five years. Technology concepts will be nurtured from initiation, through a mentoring and support process, to further development by traditional venture capital funding. These 'hatchery centres' will be run from the four universities - the Southern England Technology Triangle (SET2). <http://www.soton.ac.uk/~pubaffrs/01137.htm> access date 25/09/03.

⁶⁰ The Economic profile of the South East demonstrates that the Region is the principal gateway into the UK and Europe; a significant contributor to European prosperity, it is the preferred location for multinational headquarters in Europe; intertwined with that of London through commuting patterns, business and sectoral links.

London

Finally, there is London to consider.⁶¹ The London Higher Education Consortium (LHEC), with the 40 higher education institutions in Greater London as members, was launched in March 2000. The higher education sector in London is characterised by its diversity, size and international nature. Collectively, the universities and HE colleges provide about a quarter of all student places in England and account for about a third of all publicly funded research. They are a major sector of London's economy in their own right, with annual expenditure of £2.6 billion and 53,000 employees.⁶²

The LHEC is seen as one of the changes under way in London's government in its support for London business and in the focus of universities. The London Development Agency has identified "Prioritising Knowledge and Learning" as one of the key actions in its strategy and the LHEC is seen as a major partner in this work. In terms of governance structure, in May 2000, London became the country's first city to have an elected executive mayor.⁶³ Within this governance structure, universities are involved in a diverse range of partnerships with bodies such as London First⁶⁴ engaged in inward investment promotion, the London Development Agency (LDA) and its precursor the London Development Partnership (LDP) as well as a range of other local and regional partnerships (Benneworth and Charles, 2001:135).⁶⁵

⁶¹ London leads among the English regions and the rest of the UK in terms of indices of regional competitiveness and of regional knowledge-based business, according to recently reported findings by Cardiff University. GDP per head in London, at over £14,400, is nearly 25 per cent higher than in the rest of the country (Universities UK/HEFCE, 2001g: 15). However, there are huge economic disparities within London.

⁶² Higher education in London is "a successful export industry, attracting many overseas students to the City, collaborating with international researchers and selling courses throughout the world" (Professor Roderick Floud, Convenor, London Higher Education Consortium, Universities UK/HEFCE, 2001g: 9).

⁶³ The new Greater London Authority comprises the Mayor, an Assembly of 25 members, and four executive agencies.

⁶⁴ London First is the Regional Development Office for London, supporting the attraction and embedding of inward investment in London, and it is not incorporated by statute into its Regional Development Agency, the LDA. For universities, links with the inward investment offers potential for active EU links.

⁶⁵ As a Convenor of LHEC, Professor Roderick Floud has a wide remit to represent the HE sector to other London agencies. HE joined LDP board as an 'expert' from the HE sector and the collective support of

Under HEROBC, Knowledge Bridge comprising 20 HEIs was formed in partnership with LDA, London First and Business Link for London.⁶⁶ Under SEC, four Science Enterprise Centres have been established among London universities (see Chapter 5, Table 5.6, p.172). Under HEIF, a wider collaborative mechanism, London Technology Network (LTN), was formed to enhance “knowledge acquisition” from 19 London universities.⁶⁷ LHEC encourages collaboration between universities and colleges with business to improve competitiveness and innovation. Universities have been important actors in the whole process of changing governance which has taken place in London as a ‘global city’. Universities have devoted considerable effort to making sure that their voices are heard as the new London system of governance evolves (Benneworth and Charles, 2001: 139).⁶⁸

This completes the accounts of university-industry-government relationships in the nine English regions. The chapter now moves on to reconsider the engagement of universities in the multi-level governance (MLG) structure of regional innovation systems in the knowledge economy. Typologies of different spatial models of university-based regional innovation systems are set up using the examples presented above.

LHEC has made him “a great deal more influential in the process of drafting a London Regional Economic Strategy than as a co-opted representative” (Benneworth and Charles, 2001:143).

⁶⁶ <http://www.knowledgebridge.co.uk/aboutUs.asp> access date 19/06/03.

⁶⁷ The LTN focuses on technology transfer, and it aims to help technology-intensive companies put ideas into action by linking them with London-based academia. The activities of the LTN and those of Knowledge Bridge are complementary to each other [based on notes from Content Manager, Knowledge Bridge, September 2003].

⁶⁸ For example, 19 London universities have joined London First, and along with the business sector, have collaboratively promoted of London a ‘global city’ in order to attract more overseas students.

8-2 REGIONAL STRATEGIC NETWORKS AND MULTI-LEVEL GOVERNANCE OF INNOVATION SYSTEMS

Regionality of Third Stream Funding

As has been shown above, the third stream funding initiatives such as HEROBC, HEIF and SEC helped universities to build the infrastructure necessary to work with businesses and communities, and especially with their regions. The evolution of the political governance structure in English regions has been accompanied by development of the MLG structure of the knowledge economy. Universities are significant players in these structures with their role partly enhanced by these national third stream initiatives. Most individual universities had been involved in their own third stream activities prior to these national initiatives, but as part of their HEROBC and HEIF strategies, many universities have identified the need for new organisational structures and for business development managers to strengthen these activities. Also, driven by central government, universities are focusing their engagement more regionally. Universities' expertise, generated through inter-related education and research on local, national and international scales, has proven to be a "positive and dynamic asset" (Benneworth and David, 2001:145) for other regional partners in each region.

In the second round of HEROBC and HEIF, many regional or inter-regional collaborative bids were made. This was encouraged by HEFCE, who made contributions to the creation of a regional collaborative mechanism for higher education regional associations. Along with individual institutional bidding, there has been collaborative bidding between several institutions and between all HEIs in one region, or across regions.⁶⁹ Table 8.2 lists major regional and inter-regional collaborative bidding for HEROBC and HEIF.

⁶⁹ For example, there is the collaborative project, Midlands MEDICI, as part of HEIF between five universities in East and West Midlands. See above, p.260-1.

Table 8.2 List of HEROBC and HEIF regional/inter-regional collaborative projects with the number of participating institutions

Funding	Names of programmes	Region(s)	Number of institutions
HEROBC	Knowledge House	North East	6
	Innovation Fellowship Fund	East Midlands	2
	FULCRUM	South West	14
	CONTACT	West Midlands	13
	KnowledgeNorthWest	North West	16
	Knowledge Bridge	London	20
HEIF	Knowledge NorthEast	North East	6
	East Midlands Incubation Network	East Midlands	6
	Mercia Spinner	West Midlands	8
	MEDICI	East and West Midlands	5
	SET2	South East and South West	4
	Knowledge Technology Network	London	19
	Regional Infrastructure for Innovation (RII)	East of England	11
	Knowledge Exploitation SW	South West	14
	Genetics Innovation Unit	North West	3
	Aerospace research programme	North West and Y&H	3

*Compiled from various sources. Information is as of July 2003.

These collaborative programmes can be seen as networks and as *spatial strategic alliances* developed in response to the current funding initiatives and as a result of the geo-historical interest of the regions and institutional interests. As shown in the table, networks vary in terms of the number of member institutions involved, their purposes, duration, financial resources and their spatial scopes. It is this geographical dimension of network formation as part of innovation systems that the next section turns to look at.

Typologies of University-Based MLG Regional Innovation Systems

Following the typology of regional innovation systems, the following classificatory schema is introduced. In terms of the *governance of innovation support*, three modalities are proposed: *grassroots*, *network* or *dirigiste*. Complementing the governance dimension, the *business innovation dimension* can be classified as *globalised*, *interactive* or *localist* (Cooke, 1998: 19-24).

From the particular interest of this study, the formation of university-based regional innovation systems can be classified in terms of *governance of knowledge generation* (*grassroots*, *network* or *dirigist*) and *knowledge exploitation* (*globalised*, *interactive* and *localist*). Given the fact that the development of regional innovation systems in English regions is in its infancy, this is not an attempt to categorise each region in a rigid framework but could serve as a guide to indicate the different evolutionary pathway each region is, or may be, taking.⁷⁰

Table 8.3. Typologies of university-based MLG regional innovation systems

The Governance of Knowledge Generation in the Regions

⁷⁰ As to the governance of knowledge generation, the grassroots approach includes the regions with longer history of university collaboration in a regional development framework (the North East and, Yorkshire and the Humber), and the one with recent universities' involvement with devolved government (London). The East and West Midlands, East of England and the South West are characterised by the development of university collaboration promoted by centrally led third stream initiatives. East of England is moving to network approach through RII. The North West Region is linking its regional science strategy with the creation of a 'world class' university, taking a strategic network approach. The South East Region is characterised by positioning itself in the global knowledge economy, by international benchmarking and its links with multinational firms.

Knowledge Exploitation		Grassroots	Network	Dirigist/ Centrally-Led
	Localist			
	Interactive	NE Y&H	→ NW	← EM, WM SW
	Globalised	London	→	← EE SE

Whilst some scenario is useful, it, again, needs to be emphasised that the purpose of this study is not to *categorise* each region, which is located within different historical and political contexts with various structural and agency factors. Understanding the regional diversity and the disparity is most important. Thus, the next section highlights similarities as well as differences in the development of regional collaborative mechanisms as forms of networks.

8-3 STRATEGIC CONTEXTS AND ACTIONS WITHIN THE REGIONAL INNOVATION SYSTEMS

Convergence and Divergence in the Organisational Fields

Different models of regional university collaboration mechanisms as part of the regional innovation systems developing in the nine English regions have been identified in this chapter. Based on the accounts provided above, similarities and differences emerging in the selective/selected⁷¹ strategic contexts and strategic actions taken so far in the nine regions as organisational fields are considered below.

In particular, it is clear that HERAs are different in terms of their organisational structures, resources and their strategic positioning in relation to their regional partners, in particular, the RDAs. The structure and organisation of HERAs seem similar: most of them have a Board consisting of Vice-Chancellors or Principals of each member institution, a committee consisting of Pro-Vice-Chancellors, and several special

working groups. However, as one of the Secretariats put it: “We [HERAs] are becoming different organisations”[interview December 2002].

Two HERAs (Yorkshire Universities and HESE) take the form of companies limited by guarantee, non-profit independent organisations which can make contracts. Other HERAs are voluntary associations of some sort.⁷² HERDA-SW and AUEE collocate their offices with their RDAs, which enables them more easily to share information and regional agendas. NWUA and HESE are also located near their RDAs. HERAs vary very much in terms of their financial resources. HERA’s core funding consists of HEFCE’s pump priming funds (£25,000 for three years) and member institutions’ subscription fees. The income from subscription fees varies depending on the number of members.⁷³ Other sources of income differ depending on the nature of HERA activities. The money which goes from RDAs to HERAs is one point of significant difference between the regions. The Secretariats of HERAs differ in terms of the number of staff and their operational nature. Some Secretariats deliver their own programmes and sell their own services whilst others principally serve as coordinators (see below). See Appendix 8.2 for summary.

Convergence and Divergence in Strategic Contexts and Strategic Actions

Despite such an organisational differentiation of HERAs, some convergence of the ‘strategically selective contexts’ in the nine regions has been found. Table 8.4 summarises several newly emerging contexts for which HERAs and RDAs are important actors.

⁷¹ Applying the SRA thinking, actors perceive ‘selective contexts’ and, then, the contexts are ‘selected’.

⁷² In this case, instead of the HERA, one of the HEIs in the regions bid for government money as lead institution for collaborative programmes.

⁷³ The number of member institutions varies from six to forty. Most of the HERAs differentiate membership fees between their university members as full members and HE college members, who are called associate members. Uni4ne only has university members. HERDA-SW does not differentiate university members and HE college members. The subscription fees for HESE depend on the FTE student

Table.8.4. List of some of the strategically selected contexts in the regions

	Science Councils	Regional HE knowledge brokerage service by HERA/HEIs etc.	Collective ESF by HERA	Regional TCS- like Arrangements by RDA/HERAs etc.	Regional labour market project by HERA
NE	Y	Y	Y	Y	Y
Y&H	preparing	(Y)	Y		Y
NW	Y	Y		Y	
WM	preparing	Y	Y	Y	
EM		Data base			
EE		Y			Y
L		Y			
SE	Y	Data base	Y		Y
SW		Y			Y

*Compiled from various sources. Information is as of July 2003. Y: Yes.

As already mentioned several times in the regional accounts above, and earlier (Chapter 5, p. 178-9), Regional Science Councils are the examples of strategic contexts where networks are formed involving the HERAs as important players along with the RDAs, individual universities/HEIs and other partners. The following accounts give four other examples of strategic contexts appearing in the nine regions and, different strategic actions taken within them.

1. HE Knowledge Brokerage Service and Intermediary Organisations

Several HERAs run Knowledge Brokerage Services as flag ship projects of their own. The model of Knowledge House in the North East, which was recommended in the Dearing Report (NCIHE, 1997), has been taken up by other regions such as North West (*KnowledgeNorthWest*), the West Midlands (*CONTACT*), and London (*Knowledge Bridge*). East of England (*RII*) and South West (*Knowledge Exploitation SW*, a business service through an Accounting Manager) have services of similar nature.

In some regions, HERAs are directly involved in knowledge brokerage services (North East, North West and South West). In the West Midlands, all 13 HEIs run the

numbers of each institution. Other HERAs charge higher membership fees for university members whilst

project funded by HEROBC, named CONTACT which has a similar function to Knowledge House in the North East. However, in the case of the West Midlands, CONTACT has its own management body and separate board, and is run separately from the WMHEA (above, p.261-3). In the East of England, RII, Regional Infrastructure for Innovation, funded by HEIF serves similar purposes. A number of discussions have taken place between AUEE and RII with a view to clarifying roles and responsibilities. Some HERAs (EMUA and HESE) have set up data-bases that encourage interactions between higher education and business but don't have a team dedicated to knowledge brokerage services.

Relationships between knowledge brokerage services provided by HEIs and intermediary organisations is an issue also commented on by Secretariats of HERAs.

As the Manager of Knowledge House commented:

Difficulties are working with third party and relationships with intermediaries. The longer the chain of communication gets, the more difficult it becomes. That is the main issue. We have our own activities. At the moment only a small portion of work comes from third party [based on notes from interview, December 2002].

Knowledge House has a close link with MAS which collocates with the office in the North East.⁷⁴ In the North West, KnowledgeNorthWest has various partner collaborations including with Business Links, TCS, Chamber of Commerce and so forth.⁷⁵ CONTACT, in the West Midlands, have sub-regional business development managers who has strong links with Business Links/SBS, and a relationship has also been built with MAS. A collective approach is taken by RII in East England and HERDA-SW through Knowledge Exploitation SW whereby links with MAS and the

HE colleges pay less. The Open University branch in each region pays lower fees.

⁷⁴ In the North East, a review of business support was commissioned by the RDA, and the link with Business Links/Small Business Service was formally assessed.

⁷⁵ "There is no particular model of collaboration with these organisations, but the CBI guide "Partnerships for Research & Collaboration" was found to be useful" [interview February 2003].

SBS are co-ordinated with other stakeholders. HESE has a more formal approach in terms of building a collaborative relationship with SBS.⁷⁶

2. Skills Agenda and Labour Market Intelligence

Issues concerning skills development and the regional labour market in the light of the knowledge economy are other significant strategic contexts for which each region is developing their own strategic actions. All HERAs represent HE interest in FRESA (see Chapter 5, p. 177) in each region and coordinate HEFCE funded *Partnership for Progression* (P4P, now renamed as *Aim Higher*) co-ordinating sub-regional partners.⁷⁷ Both FRESA and *Aim Higher* have national templates and each region is encouraged to develop their own initiatives to respond to their own regional needs and enhance each Regional Economic Strategy.

Some individual HERAs take a proactive approach to the graduate retention issue. In Yorkshire and the Humber, graduate retention is considered to be a principal issue and Yorkshire Universities, the regional association of higher education, runs the Labour Market Intelligence Project funded by Yorkshire Forward. Yorkshire Universities commissioned a study to examine the regional intelligence needs relating to graduates in the labour market on behalf of Yorkshire Futures.⁷⁸ The chief executive officer of Yorkshire Universities, commented:

"Graduates are an enormous potential resource for employers, both large and small. Research has shown that they add significantly to the skills base and the effectiveness of companies. We need more of our graduates to stay and work in Yorkshire, to help

⁷⁶ An SBS/HESE regional workshop was held with full representation of HE Business Development Managers and Business Link advisers. An SBS commissioned report recommends ways of improving collaboration between HEIs and Business Links, for mutual benefit across the Region (HESE, Newsletter, May 2002).

⁷⁷ In the South West, widening participation projects and organisational bodies pre-existed the regional HE association, and they exist separately with close relationship.

⁷⁸ Yorkshire Futures is the name of the regional intelligence network. It is a partnership between Yorkshire Forward, the Yorkshire and Humber Assembly, the Government Office for Yorkshire and the Humber, Yorkshire Universities, the Learning and Skills Council, and the Public Health Observatories.

boost the Region's economy. This study has shown us new ways in which employers' needs can be met."⁷⁹

In similar vein, in the East of England Region, EEDA, the RDA, commissioned research through AUEE about the labour market situation in the Region based on the recognition that many of the graduates in the Region leave for London. Five researchers from universities in the Region are working on the issue of graduate retention in the Region.

Every region has established a regional intelligence body of some sort in charge of labour market intelligence and the skills agenda. An integrated approach covering skills development, the regional economic strategy and labour market intelligence is seen as the key, and higher education is a crucial element in this. For universities, partnership with further education, LSCs, employers, and professional bodies is important. The HESE Secretariat mentioned that SEEDA is trying to work on developing courses based on Skills Insight.

“Getting right skills is the agenda. Employers alert HEI about potential skill needs and shortages. ...HEIs develop courses to meet market forces as seen by students but these do not necessarily correspond to employer markets”[based on notes from interview November 2002].

Hence, the question is *who* is supposed to be sensitive to *the market*, and through what mechanisms are the market demands to be integrated into the educational structure within the region.

3. People at the Knowledge Interface - Student Placements and Professional Capacity Building as Part of Innovation Systems

The third strategic context emerging in the regions highlights the role of individuals at the knowledge interface. One of the main elements of technology transfer occurs through placements in firms of individuals (student or academic) with links with

⁷⁹ http://www.yhwa.ac.uk/common/march02_lmi.html 27/07/03.

universities, either to help on a particular project or to provide an ongoing link between the firm and university. Key national programmes for this are TCS (now renamed as Knowledge Transfer Partnerships), and the Shell Technology Enterprise Programme (STEP) which encourage mentoring between university and businesses (see Chapter 4 p.124 and 254). Secondly, growing attention is being drawn to the importance of skills development for those who are involved in outreach activities in the regions.

Some regions support TCS through HERAs, through RDAs, or they have set up their regional partnership to support TCS. In the North East, TCS is managed through the North East Teaching Company Scheme network, which reports to Uni4ne Business and Enterprise Committee. The West Midlands Region is establishing a regional TCS funded by the RDA along with the national programme.⁸⁰ In the North West, TCS Northwest, created in 1999, has nine founder members that collaborate to ensure the North West Region gains the maximum possible benefit from TCS. It is supported by the ERDF.

Under HEROBC and HEIF and other third stream funding schemes, new posts have been created in the expectation of functioning as ‘boundary spinners’ or ‘animateurs’ within and between different university departments, institutions and sectors (see Chapter 6, p.208; Chapter 7, p.262). There are some co-ordinated approaches to enhance the skills of these ‘boundary spinners’. There is a recognition that the interface role is a specialist one and that, although numbers of staff working in this area have increased, there is limited access to opportunities to raise skills. At national level, Cambridge-MIT Institute (CMI) has launched a new project, *Praxis* which aims at developing the skills of staff who engage in knowledge transfer and CMI works very closely with RDAs.

⁸⁰ KITTS is another similar programme for a shorter period. See Chapter 7, p. 254.

There are two examples of professional development programmes by regional initiatives. *Cupid* is a two-year professional development programme developed through Uni4ne, funded by the HEFCE and managed by the University of Sunderland in the North East. The primary aim of the programme is to enhance the regional impact of university reach-out activities through the identification, development and piloting of good management practices in staff development. It is aimed at those staff in HE who work on the interface between universities and industry and will build upon previous work undertaken by the Association for University Research and Industry Links (AURIL). Connections will be established with other external agencies operating in related roles to reduce duplication and provide an improved service to the business community. Another example is HEROBC funded *Fulcrum* programme in the South West Region already mentioned above (p.295). These national and regional schemes can be assets in the development of regional innovation systems.

4. Inter-Regional Learning Processes

Fourthly, it is worth noting a significant convergent force within the organisational fields. HERAs' Secretariats meet regularly co-ordinated by personnel at Universities UK where they exchange information and practices and share experience of their similar problems. Recently, with the increasing importance of the regional agenda in their activities, such as new HEIF projects and Knowledge Exchanges, it was decided that HEFCE should take part in the meetings [Universities UK Policy Advisor, interview June 2003]. In 2003, an initial meeting was held between officers who run knowledge brokerage services in the regions.⁸¹

The Secretariats of HERAs see their organisations in relation to others. For example, Uni4ne in the North East Region sees itself as a “delivery organisation”,

whilst its equivalent in the North West Region, NWUA, is seen as a “more strategic organisation” [Director of Uni4NE, interview, December 2002]. Between the North East Region and the South West Region there have been close bilateral links, and especially widening participation agenda through which officers exchange information inter-regionally [widening participation officer, Uni4ne, interview, December 2002]. There are many inter-regional and international learning processes taking place and organisations are influencing each other.⁸² HESE in the South East is taking a very international approach in terms of learning ‘best practice’; and the HERDA-SW in the South West Region mentioned the possibility of collaboration within an enlarged European context.

Strategic Co-ordination of Networks and Systems of Innovation

These accounts are some of the examples of strategically selected contexts in the regions, and are by no means comprehensive. The present is an early stage of development in the regional architecture of knowledge economies and one has to be careful in making any comparison between regions.

What seems to be common to all English regions is the integration and mainstreaming of third stream activities of universities within a regional context. The strategic actions and contexts differ, but *all* regions are establishing some kind of integrated regional mechanism leading to innovation systems, even if not yet fully developed. Notably through HEIF, each region is trying to link national, European and global innovation systems. For example, in the East of England, HEIF-funded RII is linking global, regional and sub-regional partners extensively. In the South East, the

⁸¹ Similar exchange of information takes place between RDAs at many different levels of personnel. For example, the Heads of Innovation of nine RDAs meet regularly.

⁸² The head of HERA Secretariat of East Midlands referred to the work done in the South West Region on the economic impact of HE in the Region as a one of the reasons to launch a similar study in East Midlands [interview October 2002].

Enterprise Hub concept has worked as a catalyst to integrate HE into regional development. In the South West, the HEIF project, Knowledge Exploitation SW, integrates different aspects of these third stream activities co-ordinated by HERDA-SW. The North West and North East have started a more comprehensive approach by integrating activities with Regional Science/Industry Councils as intermediary organisations between the RDAs and other stakeholders.

Another common characteristic emerging in English regions is the multi-level governance structure of knowledge production including skills development and massification of higher education. The development of regional governance is accompanied by co-ordination of projects at sub-regional level. RDAs are responsible for co-ordinating FRESAs through partnerships with HE, LSCs, FE colleges, and SBS, with many of the projects run at a sub-regional level. Partnerships for Progression/Aim Higher are organised by HERAs or lead organisations in the region with close links with HERAs. These projects are also co-ordinated at sub-regional level. Cluster development is principally taking place at sub-regional level. In the West Midlands, since the launch of the business cluster development plan, the links between AWM and WMHEA through CIMs and COGs (see Chapter 7, p. 260) have been strengthened integrating regional strategies and sub-regional cluster agendas. One RDA, EMDA, has especially taken a sub-regional approach (see above, p.291-2).

In terms of any multi-level governance structure of regional innovation, the connection with European Union is growing in significance. All English regions have offices in Brussels through which funding and partnership opportunities at European level are explored. Some of the HERAs represent the HEIs in their regions collectively

and make financial contributions (WMHEA, HERDA-SW). In other regions, HERAs have links through the regional assembly (Yorkshire Universities, NWUA).⁸³

CONCLUSION

This chapter has looked at the formation of regional innovation systems in the nine English regions by focusing on the regional university collaborative mechanisms. Many of the regional consortia of HEIs have been established through financial incentives from HEFCE project-based funding (e.g. HEROBC, HEIF, UC and SEC). Also, each region now has its HERA, which represents the voice of the higher education sector in the region. These two types of university consortia can function as a forum, where different expertise, resources, and institutional experience can be strategically incorporated, and this can be a very effective way of accelerating progress in regional collaboration. HERAs exist in all nine English regions, and the strategic roles they play in relation to other regional partners as part of the strategic contexts of both the regional development and higher education organisational fields are again determined by both structural and agency factors.

By combining the strategic-relational approach to networks with the concept of regional innovation systems under a multi-level governance structure, different forms of university collaborative mechanisms through networks as strategic alliances have been identified. Universities and higher education institutions act not only as knowledge generation and diffusion institutions in a region but they also act as the main *strategic actors* in forming regional innovation systems both through identifying regional science strategies, developing skills in the region, and gaining access to resources outside the region. Knowledge networks serve as regional strategies to create regional advantage in

⁸³ In the North East and the East Midlands, individual HEIs subscribe to the European Office, and in the South East links are made through sub-regional partnerships [based on information from HERAs as of March 2002].

the globalising knowledge economy. The chapter has identified divergent as well as convergent strategic contexts and actions in the regions which condition these networks and has located the different models of collaborative mechanisms within the theoretical framework of regional innovation systems.

Thus Part III of the thesis has provided three different spatial settings of network formation: firstly at a university level; secondly at a regional level; and thirdly comparing different models of network development in the nine English regions. Each spatial context provides an organisational field in which strategic actors respond to their own perceived context by strategically selecting their networks as strategic alliances. These actions take place under structural constraints and the new opportunities created by these networks.

Part IV

Conclusion

Part IV with its two final chapters concludes the discussion of the thesis. Chapter 9 links empirical results presented in the succeeding chapters with the theoretical discussion made in earlier chapters. The theoretical perspective to networks is tested in the light of the real forms of networks as delineated in the last three empirical chapters. Chapter 10 reviews the discussion made in the thesis, identifies the contributions that this thesis is considered to have made, and concludes the thesis.

Chapter 9

New Markets and Governance Structures: The Roles of Strategic Networks between HE and the Region

INTRODUCTION

The purpose of this chapter is to integrate the research results on the development of real forms of networks as delineated in the last three empirical chapters - Chapters 6, 7 and 8 and, to link them to both the theoretical discussion in Chapters 2 and 3, and the policy contexts as discussed in Chapters 4 and 5. The analysis is made by synthesising the strategic-relational approach (SRA) with the conceptual model of regional innovation systems given in Chapters 2 and 3. The chapter also considers the validity of the theoretical and methodological frameworks used in this thesis in which the two areas of public policy, namely, higher education policy research and regional development policy research, were combined, and the interactions between public policy and institutional actors were seen as socially contested institutionalisation processes.

In the first section of the chapter, following the SRA to networks, the different forms of university collaborative mechanisms that seem to be developing in the nine English regions are explained by both structural and agency factors. The interaction of the structural and agency factors leads to the *strategic contexts* and *strategic actions* including networks as *strategic alliances* (Chapter 2, p.31, Figure 2.1). These networks form part of regional innovation systems in which knowledge is generated, disseminated and exploited at different geographical scales. The second section of the chapter links the above discussion to the practical issues emerging in the organisational

fields. These cover the issues of competition and collaboration between universities at a regional level, the issues of metrics for third stream activities in the regional context and the power of convergence and divergence within the organisational fields set within the policy context of the UK. Thirdly, building on the discussions on interactions between policy and institutional actors, and those on practical problems of building networks, the chapter re-examines the overall theoretical framework of this study, namely the strategic-relational approach to the institutionalisation processes including both policies and actors.

9-1 THE STRATEGIC-RELATIONAL APPROACH TO ORGANISATIONAL FIELDS AND INNOVATION SYSTEMS

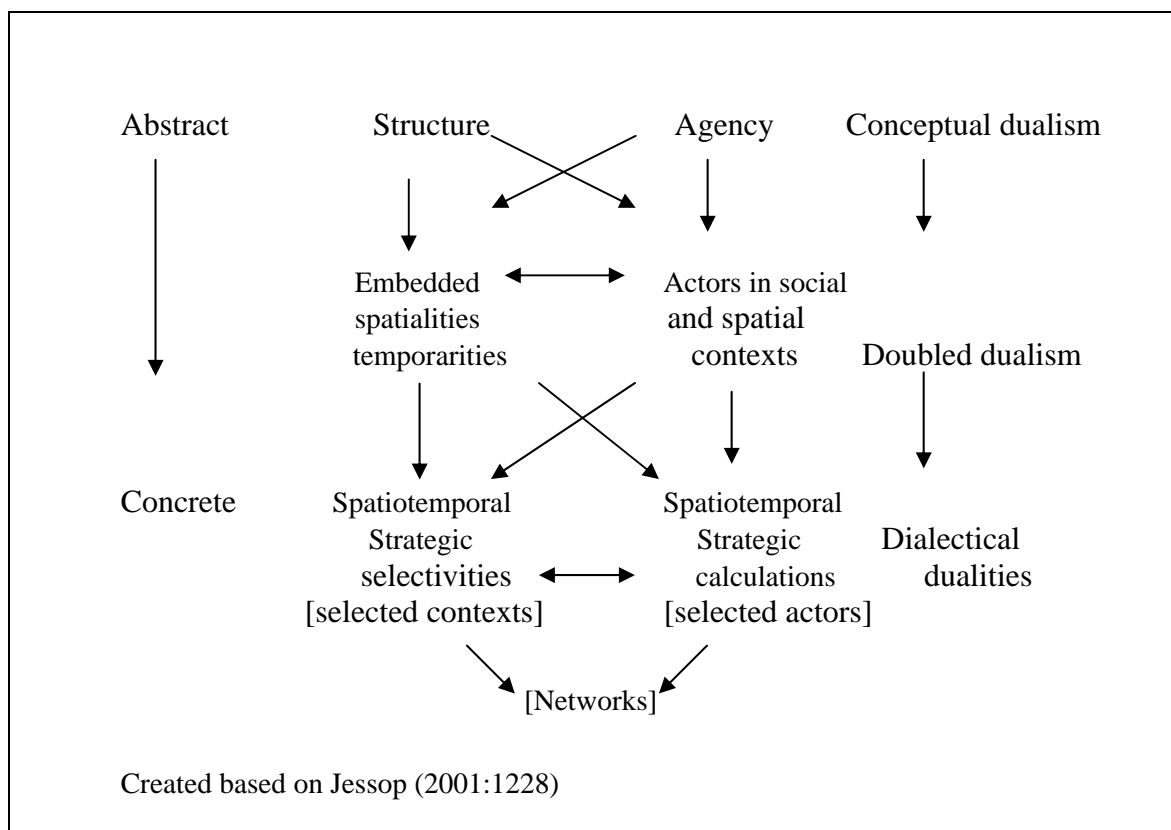
Structure and Agency Factors and the Spatiotemporality of Network Formation

As shown empirically in Chapters 6-8, the forms of networks and collaborative mechanisms developing in each region are conditioned by the wider structure in which the region, as the organisational field, is located in terms of its historical character, resources and the state of the regional political economy. Universities, as institutional actors, take strategic actions within strategically selective/selected contexts. The university collaborative mechanisms are the results of structural as well as specific agency factors such as the history of the particular institution and the perceptions, experiences of, and relationships between, individual players within the institution. There is an interaction between structural and agency factors: national policy promoting third stream activities allowed institutions and regional bodies to appoint a number of new personnel who are devoted to creating new links and strategic networks, which, in turn, influence the structural factors in the institutional and regional contexts, and also

some of the national and international contexts.¹ Network relationships are constrained opportunities and resources perceived by actors at a particular time in a particular time-scale.

Figure 2.1 in Chapter 2 (p.31) illustrating the conceptual framework of the SRA can be modified as in Figure 9.1 incorporating the ‘spatiotemporal’ dimension (see Jessop, 2001:1228). Network relationships are formed inter-spatially based on the spatiotemporal selectivities of contexts and spatiotemporal calculations of actors.

Figure 9.1. Spatiotemporal dimension of the strategic-relational approach to networks



Following this schematic framework, the next section gives accounts of the concrete contexts and the actions taken in the organisational fields as presented in previous chapters.

¹ These people can be seen as ‘boundary spinners’ or and co-ordinators who build networks as strategic actions. See Chapter 6, p.208.

The Strategic-Relational Approach to HE Markets, Governance and Networks in the English Regions

The following structure and agency factors can be identified along with the emergence of strategic actors and new strategically selective/selected contexts.

Table 9.1. Structure, Agency factors and Strategic actors/contexts

Structural factors <i>Policies, existing resources affecting regions</i>	Agency factors <i>Universities and other actors</i>	Strategic actors Strategic contexts <i>Networks and other intermediaries- coordination, strategies</i>
<i>Regional R&D resources</i> Multinational R&D European Research Policy and resources European research policy Framework programmes National Research Policy and resources National R&D allocation- private, public and HE Research councils <i>National HE policies and third leg policies resources</i> e.g. OST, HEROBC funding for each HEI <i>National ‘Regional Policy’ and Devolution</i> Assisted area or not RDA resources for HE Existing facilities e.g. Number of Science Parks; Incubators QR allocation Number of universities Types of universities European Regional Policy Objective Area or not EU Skills Policy National labour market National skills policy Regional labour market <i>Regional labour skills potential</i>	EU DTI-OST HEFCE RDAs, GOs Universities, University researchers and Research councils Universities’ international research collaboration; Academics interested in applied research Universities’ spin-out activities, Institutions involved in SECs, UCs, HEROBC, HEIF, HEACF Universities’ third leg activities, business support; Number of personnel appointed by 3 rd stream funding <u>Current HE regional consortia</u> <u>HERAs</u> HEFCE regional consultant Universities’ engagement with ERDF/ESF; Academics interested in working with SMEs Entrepreneurship education Student placements Graduate employability Universities’ engagement with regeneration agenda DfES, DWP, DTI EU HEIs, FEs, LSCs, SSCs	<i>Innovation and Competitiveness agenda</i> RES RIS European transnational research collaboration National Research collaboration; Knowledge Transfer e.g. Faraday partnership; TCS, LINK National/regional inward investment strategy Regional HE and Research strategies Regional Science Council Regional Science Strategy Regional Knowledge transfer Technology transfer Mechanisms and strategies e.g. Knowledge brokerage Regional TCS, STEP <u>Collaborative 3rd stream bids</u> HEIF collaborative bids Collaboration with MAS, SBS and other intermediaries Knowledge Exchanges Collaboration between research-intensive and less research-intensive universities Regional collective ESF Regional Intelligence Network FRESA P4P RES <i>Skills development and labour market agenda</i>

Applying the SRA to higher education markets, territorial governance systems and networks emerging in the English regions, there are four important structural factors that influence the recent developments of 'strategically selective contexts' which may lead to the formation of regional innovation systems.

Firstly, the important structural factor in terms of the formation of regional innovation systems is the science and technology base in each region with total R&D expenditure taking place in the region's universities, research institutes and businesses (see Chapter 5, p.152-3). As discussed earlier, there are new mechanisms, so called Regional Science/Industry Councils, emerging at regional level in some regions, which may influence the strategies of the regional as well as the national actors including businesses, universities and research councils by enhancing the regional capability for research and development. These intermediary organisations are the prime example of networks as strategic actions as a 'bottom-up' process by regional actors.²

Secondly, the availability of highly skilled labour in each region is another structural factor affecting the development of regional innovation systems, and universities are one of the important actors in this field. The recent national strategy, drawn up by nine English RDAs entitled *Frameworks for Regional Employment and Skills Action* (FRESA) co-ordinate different regional actors and link various agencies concerned with the skills development agenda in each region. Unlike Regional Science Councils, FRESAs were started as a nationwide initiative co-ordinated by the RDAs. The aim was to "provide a single plan based on coherent, valid and accessible labour market and skills intelligence, and to provide a focus on what needs to happen to

² The central government, principally DTI, encourages such Councils to be set up in all English regions, but no direct financial support has been given by central government so far to support them as of 2003.

improve the prosperity and prospects of businesses and individuals within the region”.³

FRESAs can be seen as a national strategic context (at template level) but, within the varied regional strategic contexts (at an actual framework level), strategic actors are drawn together and implement strategic actions at regional and local level.⁴

Thirdly, there have been recent political and institutional processes of devolution in English regions which have influenced the development of regional innovation systems. Regional Economic Strategies drawn up by RDAs in 1999 and 2000 show how each RDA sees its region and how it related the various regional actors to the broad strategy. Higher Education Regional Associations (HERAs) can be seen as the creation of a unified voice for the higher education sector in each region in response to the creation of RDAs and the evolution of other regional governance bodies (see Chapters 7 and 8).⁵ This has to be seen as part of the process of devolution of governance, the evolution of regional institutional frameworks and, institutional and political capacity building at a regional level.

Fourthly, it is important to point out that the development of national initiatives and European programmes promoting the growth of the third stream activities of universities has enhanced the regionality of university activities. Regional mechanisms of collaboration have been set up by the HE sector supported by HEFCE, the EU, GOs, and RDAs since the late 1990s, which constitute important knowledge generation and exploitation sub-systems within regional innovation systems. The ‘third stream’ funding such as HEROBC, UC, SEC, HEIF and HEACF, and the European funding such as

³ *Supplementary Guidance for the Regional Development Agencies in relation to the Regional Economic Strategies* <http://www.dti.gov.uk/rda/guide/chapter3.htm> access date 05/10/03.

⁴ During 2002 an Inter-Agency Working Group, led by Yorkshire Forward RDA, created a template for the *Frameworks and offered advice and guidance on developing the FRESA process. See Review of Framework for Regional Skills and Employment Action FRESAs*. [sic] (Schofield Association, May 2003).

⁵ HEFCE encouraged the creation of HERAs to provide the means of cooperating on research, teaching, and access at a regional scale, whilst in some regions, universities and HEIs tool initiatives to form such bodies.

ERDF and ESF encouraged the formation of higher education consortia, and HERAs often serve as the interface between individual HEIs and these collaborative programmes and the RDAs. Chapter 8 provided accounts of the strategic contexts emerging in the regions and the different strategic actions taken by HERAs and other regional partners.

These four structural factors influence the strategic contexts emerging within the organisational fields of regional development and higher education, in which strategic actors at multi-spatial scales are selectively interacting and forming network relationships. In particular, the role of universities in this process, especially through third stream activities which have been promoted by central government, has been analysed in this thesis. These processes affect the dynamic evolution of regional innovation systems in English regions. Regional innovation systems are constructed through the dialectical and inter-spatially interactive processes between structural factors such as the wider political economy and strategic actions by agents which, in turn, create new strategically selected contexts (see Figure 9.1 above). The next section relates the theoretical discussion above to the practical issues emerging in the organisational fields.

9-2 THE ENGAGEMENT OF UNIVERSITIES IN THE NEW REGIONAL KNOWLEDGE NETWORKS

Competition and Collaboration

One of the issues raised by the HERA Secretariats is how to balance competition and collaboration between universities. In order to embed universities within systems of innovation, integrating the different strengths and resources of the universities and

higher education colleges is crucial but competition between institutions sometimes hinders such a collaborative approach. Several interviewees elaborated on this.⁶

Competition is always an issue, but in many cases collaboration is more effective. It is important to realise that (universities) don't have to collaborate on all things at all times!! [NW]

In terms of regional collaboration the biggest barrier is national funding and competition particularly sub-regional competitions within a City. [WM]

People are willing to collaborate. There is willingness and openness. The question is how to maximise the benefits of collaboration. The difficult bit is to line-up institutions together but for institutions to reach the level of benefit if done individually. Competitive bidding process discourages collaboration. Institutions tend to see short-term gain rather than long term benefit. [SW]

There was initial suspicion among institutions about to collaborate because HEIs in the UK are in a competitive relationship, and co-operation and collaboration are relatively new ideas. However, the collaboration grew very quickly, and individuals in the HEIs are making connections across the Region. Having trust is the key thing. Enterprise Hub has worked as catalyst to make things happen. [SE]

Competition isn't really an issue as we are very diverse as institutions and we are geographically separate. However, collaboration takes time, and cost. [EE]

We have no strain of collaboration. ...Now it has come to be an issue of understanding: collaborate if it benefits you. Institutions do not know exactly where their collective strengths are; this is where the association fits in. [EM]

In terms of the areas of collaboration, the interviews with the 8 HERA secretariats show some convergence as well as divergence in regional higher education collaboration (see Chapter 8, p.307). Another difficult issue is the measurement of this collaboration within the regional context. The next sections moves on to consider this.

Issues of Metrics

There are benefits coming out of university collaboration at regional level, some of which have been discussed in earlier chapters, but it is often difficult to quantify these benefits. The sustainable HE collaborative mechanisms need to be supported at national

⁶ Quotatre based on notes from interviews with the Secretariats of HERAs.

policy level, but there is a big issue of measurement of outreach initiatives and the impacts these initiatives are having to the regions. At the moment, there aren't metrics for third stream activities (see Chapter 4, p.118-9) let alone metrics for their impact in the regional context. Each institution or each programme is evaluated against its own set targets. As one of the business development managers at a university in the West Midlands put it in an interview:

We don't know how to evaluate the effects of being a patron of the Chamber of Commerce. We have access to information and learn local agendas. At a macro level, it is easy to say that government intervention and money for third stream activities help, but it is impossible to quantify it. Teaching and research you can measure, but how well you are interacting with local businesses cannot be measured [based on notes from interview September 2002].

There is no one model of the successful third stream activities of a university let alone the measurement of its value. The indicator system has to be the one which will allow universities to be judged against specific subsets of goals rather than against a single model (Molas-Gallart, 2002:8-9). There are concerns about division between research-led universities and non research-universities. The issue has been commented upon by some HERAs.⁷ As one of the interviewees put, the question is: "Does regional case make advantage?" RDAs see it as an advantage. For HEIs, evaluation varies between institutions, and in any case, the agenda on collaboration differs in each region.⁸ As each institution has a very different starting point, the indicator also needs to take that into account.

⁷ With regard to the measurement at a regional level, one interviewee put it as follows: "The Association board is very tentatively accepting it. The concern is that regional benchmarking could create divisions between institutions. This involves new ways of thinking. It is very developmental and will only involve what are institutions are doing, and what kind of regional perspectives each institutions has, and it has to be reported back to board" [based on notes from interview September 2002].

⁸ For example, in the South East start-ups are a key issue while in the North East job-creation is seen as critical.

HEFCE published *Evaluating the Regional Contribution of an HEI: A Benchmarking Approach* (HEFCE, 2002c) which says: ⁹

It aims to encourage debate on a voluntary basis within and between individual HEIs, to assess the contributions they are making to the economic and social development of their region, and how those contributions might be developed.

There has been a gradual development of awareness over the past five years of universities' links with the local/regional economy and their links with local and regional authorities and partnerships.¹⁰ The question is to what extent the current links and networks emerging at a regional level can ensure the continuing engagement of universities.

There are challenges to all part of the triple helix, namely, universities, businesses and government (and at both European, national, and regional levels). For universities, the challenge is how to strategically incorporate their third stream activities in relation to their other activities, namely, research and teaching; and in relation to their regional partners. For businesses, the challenge is to recognise the relevance of, and find the appropriate way to use the resources at universities. Governments, at national and trans-national and regional and sub-regional levels, need to construct an appropriate infrastructure that will build sustainable relationships between universities and their regions.

New Organisational Fields and the Circuit of Power

There is a convergence as well as divergence between the organisational fields of regional development and higher education (Clegg, 1994; see Chapter 2 p.35; Chapter 8, p. 306). All English RDAs have similar aspirations with regard to the knowledge

⁹ http://www.hefce.ac.uk/pubs/hefce/2002/02_23/02_23summary.doc

This benchmarking tool was developed by David Charles and Paul Benneworth, researchers at Centre for Urban and Regional Development Studies (CURDS) at University of Newcastle.

economy, innovation and competitiveness. This is the so-called 'endogenous innovation-centred growth' approach (Potts, 2002:998; see Chapter 5, p.142), which is in line with national as well as European regional policy frameworks. The aspiration towards being 'world class' abounds in both discourses of the higher education sector and in local/regional authorities(e.g. the North West Region, see Chapter 8, p.290). The initial model of the Regional Science/Industry Councils in the North West and North East Regions is now seen as an appropriate intermediary mechanism and it has been recommended by DTI in other regions.¹¹ This is what Clegg (1994) termed 'disciplinary power' working in the organisational field corresponding to the power of 'institutional isomorphism.

However, the examination of HERAs and SECs in nine English regions suggests that these organisations as collaborative mechanisms are taking different evolutionary pathways (see Chapters 5 and 8). For example, the constitutions of SECs in English regions are very different (see Chapter 5, p.172); and the governance structure and activities of each HERA varies (Chapter 8, p. 306). It is the combination of structural and agency factors in each region that causes the differences in how the HE consortia shape themselves in their own strategically selective contexts.

The organisational field of higher education is also transforming itself. Sir Gareth Roberts' *Review of Research Assessment Exercises* (2003), the White Paper, *The Future of Higher Education* (DfES, 2003), and the 'activity types' identified in *HEIF II Funding Proposal Consultation Paper* (HEFCE, 2003b), all suggest the emergence of a new stratification of HEIs within the organisational field. This corresponds to what

¹⁰ European funding such as ERDF and ESF has been one of the most influential factors in making these partnerships.

¹¹ The South East established one in 2003 with a Vice-Chancellor of a university as Chair. Yorkshire and Humberside has been discussing the creation of a similar council. The idea of a Science and Technology Council for the West Midlands has been discussed over the first part of 2003 by WMHEA.

Clegg (1994) calls ‘the third dimension of the power’ which has the “capacity to bring about fundamental shifts in the organisational field” modifying rules and memberships of the field (Lagendijk and Cornford, 2000:211; see Chapter 2, p.35).

Although the Dearing Report (NCIHE,1997) and the series of White Papers identified that universities play a key role in economic and social development (e.g. see Chapter 5, p. 169), the degree of regional engagement of these institutions varies considerably with their history, their current activities and their aspirations. At institutional level, each institution, and even each activity within an institution, puts a different strategic emphasis on the regional agenda, which makes it difficult to construct a single framework for all regions. In relation to third stream activities, even within a university, there are sharp value differences as to the roles and responsibilities for the commercialisation of knowledge within the university. These value gaps are found between academic and administrative staff, between faculties, and between individual academics with different emphasis on teaching and research (see Chapter 6).

However, it is true that the significance of the region is greater than ever for all the universities and other HEIs across the regions. From the point of view of regional development, what seems to be needed is an institutional model of collaboration which combines the different expertise and resources of universities with the right balance of competition and collaboration to form appropriate industry-science, community-university, and university-RDA relationships to enhance the overall competitiveness of the region.

Networks can grow through both “cooperative and competitive imperatives” (Cooke, 1998:7). The government third stream initiatives encourage institutions to collaborate. Nevertheless, there are different structural factors at work simultaneously. National science policy and research funding allocation substantially condition the

formation of the organisational field in which the institutions are embedded (see Chapter 5, p.152). Regional collaboration between universities and other regional partners needs to be located within such complex organisational fields. National policy as a structural factor influences the research capability of institutions and forms the regional architecture of the knowledge economies, in which these strategic actors are embedded. University collaboration, or the formation of other wider intermediaries such as Regional Science Councils, may, however, change the structural factors by strategic actions in strategically selective contexts.

9-3 POLICY RESEARCH AS PART OF KNOWLEDGE NETWORKS

The Interface between Higher Education Policy Research and Regional Development Policy Research

This study has focused on the intersection between two areas of policy research, namely higher education policy research and regional development policy research (see Chapter 2, p.42). There were two areas of focus: one is the 'institutional strategy' for the management and policymaking of universities; and the other is the 'local social and economic strategy' implemented at local and regional level often in a framework given by the national government (see Chapter 1, p.13).

The thesis has focused on the emerging university collaborative mechanisms as constructed particularly at regional level in English regions. These are the areas where public policy and institutional responses meet within the newly emerging organizational fields. As Chapters 4 and 5 have showed, the 'regionalisation' of higher education policy has happened within the wider national and European and even global process of devolution (see OECD, 2001b) and the development and spread of the knowledge economy. All these new developments have mainly happened in the last three years

since the establishment of RDAs, HERAs and other regional partners although, in some regions, these processes had occurred earlier.

As the account of each region has made clear in Chapter 8, each region has a different regional economy structure and history of collaboration between regional players including those in the higher education sector. There are processes of policy development on a regional basis. Some general consensus on what HE views are has been developing in the regions. However, less have been accomplished so far in general long-term or ongoing terms, free from restrictions and dependence on short-term and specific schemes. All these aspirations and new activities need to address the fundamental inequalities in the space-economies where each region and its institutions are located.

Networks Towards Regional Advantage

In order to make a regional impact and to create regional advantage, long-term strategic thinking both at national and regional levels is required so that sustainable 'institutional network forms' can be introduced. The creation of an institutional framework to integrate the two structural factors identified above, namely, regional R&D sources and skills development schemes, is one of the key areas where universities can play a critical role in delivering regional outcomes. Joined-up thinking and institutional collaboration both vertically and horizontally seem to be the key. However, in reality, there are acute issues about co-ordinating and about the sustainability of these university networks at a regional level.

Firstly, there has been a problem of too much short-term funding and too many small initiatives without much co-ordination. In terms of third stream national initiatives, HEIF in 2004 is to be consolidated as a permanent third stream of funding for HEIs,

with investment rising to £90 million per year by 2005-06.¹² However, as Sir Gareth Roberts observed in the House of Lords Science and Technology Fifth Report (2003), “This is still an inadequate counterweight...to encourage people to focus principally on third stream funding” (see Chapter 4, p.132).

Secondly, there is a potential tension in the relationship between the RDAs and HEIs. As Chapter 4 discussed, the White Paper *The Future of Higher Education* (DfES, 2003) suggests that RDAs will be given a stronger role in steering the expanded HEIF. There are voices of concern from the HE sector that RDAs do not have the appropriate experience to influence HE research and third stream activities (Chapter 5 p.179). Created as a regional initiative, the concept of the Regional Science Council as an intermediary organisation is now being applied in other regions in England.

Thirdly, the formation of regional networks itself is not without problems. When it comes to inter-institutional collaboration at a regional level between universities, between HEIs and other organisations, and *between* a number of networks/partnerships, there seem to be so many barriers to overcome. Universities have set up local partnerships and networks with their neighbourhoods over years as well as forming partnerships at national and international level. Individual researchers have forged links with industry and communities on an individual basis locally, nationally and internationally. These existing networks and personal linkages do not necessarily communicate well with the new network relationships being formed, sometimes

¹² *HEIF II Special Consultation* http://www.hefce.ac.uk/pubs/hefce/2003/03_34/03_34.doc access date 09/08/03.

This new expanded HEIF, on which OST and HEFCE will be working together, will have two main aims. One is to build on the success to which all universities have contributed in knowledge transfer. Second is to further broaden the reach of these activities particularly through support for ‘less research-intensive’ university departments. The White Paper, *The Future of Higher Education* proposes to create a network of around 20 Knowledge Exchanges as a new strand of HEIF, which will be exemplars of good practice in interactions between ‘less research-intensive institutions and business and underline the distinctive mission of these’ (DfES, 2003:39).

centrally by the institutional administrative bodies triggered by the new government funding initiatives and new funding opportunities coming through the RDAs.

Universities in the Tangled Webs of Strategic Networks

These issues need to be located in the changing organisational field of higher education in the UK as discussed above. It is important to note that universities have a wide range of mission such as teaching, research and the third stream activities, and the government seems to imply that not all universities are expected to play the same roles or to the same extent. Within a region, as shown in the case of the West Midlands, for instance, different universities have their own expertise, resources and histories of collaboration with business, industry and the community.

Within each region there is generally at least one large research-led university and a number of others within which research capabilities are concentrated amongst a few subjects or are just beginning to develop. The question is therefore raised as to whether there might be scope for the research-led institutions to assume a developmental role through collaboration with staff in the universities with lower research profiles (SQW, 2000b: 9). There is the positive example of Mercia Spinner as a collaborative HEIF programme between eight regional universities in the West Midlands (Chapter 7, p.266), whilst in other regions, research-led universities tend to make a single institution bid or constitute consortium with a few member institutions. Less research-led universities also see problems in collaboration with research-led universities. The report commissioned by HEFCE (SQW, 2000b: 9) points out that:

Several [less research-led institutions] made the point that they welcome the opportunity to enter collaborative relationships but unless they do so as equal partners they are unlikely to gain and might even lose from the relationship, for example by the eventual loss of talented researchers, or at least their ideas.

Regional university collaboration has been encouraged by central government and HEFCE by various incentive funding and, as this study has shown, there are positive developments. There are cases with a longer history of regional collaboration through European funding. Under the current higher education funding regime, however, the rationale and incentives for universities for regional collaboration in the long term are still not very clear.

The relationship between universities and their regions needs to be understood in relation to the changing relationship between universities and the state. Neave (1995 b: 385) points out that it is inadequate to pay exclusive attention to the market as a contrast to state direction to account for this new level of governance. There is allegedly an emergence of “peer-pressure towards shared perceptions of appropriate roles, funding incentives, planning instruments and all manners of incentives to lateral co-operation” (Davies, 1997:30), and this emergence needs to be seen in relation to the diverse activities and missions of universities and their relationships with other education institutions and other partners in regions in the EU. The changing nature of the HE markets, dynamics of territorial governance structures and the new network relationships between them, all challenge current forms of organisations in the fields of both higher education and regional development.

CONCLUSION

This chapter has identified an insight gained through the analysis made in the previous empirical chapters linking them with theoretical discussions made earlier in the thesis. The chapter has identified structural and agency factors that influence the forms of networks as strategic alliances. Each region has seen the development of collaborative mechanisms taking different forms as determined by structural factors such as the

political economy in which each region is located, affected by national science and industrial policies and R&D expenditures, and the levels of skills available in the region, where the endeavours to form regional networks and partnerships are embedded. The different strategies of agents as actors in the organisational field affect the form and nature of networks as *strategic alliances*. National incentives aimed at encouraging universities to collaborate regionally seem to have worked, in-so-far as these institutions have made collaborative bids and established regional/inter-regional consortia in order to meet the needs of a specific funding scheme.

However, there remain acute problems of co-ordination, sustainability and measurability of all these recent developments. These difficulties and agendas in forming regional networks have been examined in relation to the policy contexts of UK higher education and regional development. The SRA to networks, combined with the theoretical model of regional innovation systems under a multi-level governance structure, proves to have been a robust enough theoretical perspective to shed light on the dynamic relationships between actors, structures, and the newly emerging strategic contexts. Networks are geographically as well as historically constructed and are always under construction or reconstruction. There are currently challenges to all parts of the triple helix, namely, universities, businesses and governments at European, national and sub-national levels. Hopefully, the approach here has thrown light and gathered evidence on the current situation with some indications about future possibilities and problems.

Chapter 10

Conclusion

INTRODUCTION

This chapter concludes the discussion of the thesis. Firstly, key findings of the thesis are summarised in the light of the research questions identified in Chapter 1 and of reviewing the theoretical frameworks presented in Chapters 2-3. Secondly, the contributions, and the limits, of the thesis in terms of theory and methodology are considered. Thirdly, the policy implications of this study are examined in the light of the nature of the study comprising two areas of policy research - 'higher education policy research' and 'regional development policy research'. Based on the findings in this thesis, possible areas of future research in terms of both theory and practice are identified. Finally, the chapter concludes the thesis by arguing that universities and regional advantage need to be considered as a dynamic process as part of the multi-level governance structure within the knowledge economy.

10-1 KEY FINDINGS

Summarising the Framework

This thesis has examined the links developing between universities and their regions in the globalising knowledge economy as observed in the UK. The concept of networks was introduced in Chapter 2 as a main analytical tool to be employed in this thesis. Networks as *strategic alliances* between actors in higher education policy and regional development policy areas have been seen to have grown in the UK under the New Labour Government. This growth has been set in the context of wider national and European policies, devolution of governance and existing regional and institutional economic disparities. Throughout this study, networks have been found to be

geographical as well as historical accomplishments. Thus, the fieldwork has been focussed on three spatial levels, that of the University of Birmingham as one institution, of the West Midlands Region and of the nine English regions, with some historical background.

The strategic-relational approach (SRA) acknowledges that structure and actors are interdependent and transform each other. Networks as strategic alliances are seen as dynamic institutional processes rather than static structures. This conceptualisation of networks can be applied across different geographical scales linking sub-regional, regional, national and European dimensions and this can be applied over different historical times. Therefore, the SRA to networks constitutes a theoretical perspective which can be applied both geographically and historically.

The network relationships between universities and between universities and their regional partners are affected by a number of factors. As discussed earlier, universities' 'embeddedness' varies with geographical scales. The extent to which universities are linked to local/regional structures are partly determined by the degree of decentralisation of the national territorial governance system and governance systems of higher education in general and, more specifically, the extent to which the activities of individual institutions are localised/regionalised.

Setting the higher education policy context in the UK, the thesis focused on the emergence of the so-called 'third stream' activities of universities, which have been promoted by central government and have significant regional implications, if not 'regionalising' the entire higher education policy. Different levels of devolution, European and national government regional policies, government science and innovation policies, the existing business structures and economic conditions of the regions are the factors which influence the 'regionality' of university activities.

Theoretical Framework

The thesis identified a paradox about the role of universities in regional development. Universities are seen as a central part of a regional innovation system, but they are also seen to be difficult to co-ordinate as part of regional strategies. Based on the existing literature, three key theoretical questions were raised in Chapter 1 (p.19):

- What are the implications of the 'regionalisation' of innovation systems for universities as knowledge institutions?;
- In what ways do the third stream activities of the universities influence the evolution of regional innovation systems? ; and
- Can universities as collective entities be considered as part of the innovation system of their region?

Regional innovation systems comprise the multi-level governance (MLG) structure of knowledge generation and exploitation sub-systems, and universities are significant knowledge institutions which link knowledge generation and exploitation sub-systems. The recent higher education policy initiatives in the UK promoting third stream activities of universities aim to fill the gap between these sub-systems. This has required new organisational forms of university collaboration as part of regional innovation systems under the MLG structure of the knowledge economy.

The UK regional policies since the late 1990s have been characterised by devolution of government and regionalisation of the knowledge economy through innovation and entrepreneurship. However, it needs to be noted that the innovation systems emerging at a regional level are constrained by the existing regional economic disparities and tensions between national and regional science and industrial policies. These are also subject to the influence of European policies and globalising economic forces (Chapter 5).

These are the areas where public policy and institutional responses meet within the newly emerging organizational fields. In the light of this, new collective forms of

university collaboration in each region can be seen as *strategic actions* taken by universities in response to the new opportunities and constraints perceived in the region as *a strategically selective context*.

Empirical Findings

Chapters 6, 7 and 8 provided an empirical insight into the development of networks as strategic alliances between actors as appearing in nine English regions, which was set against the concept of regional innovation systems in the MLG structure of the knowledge economy.

In Chapter 6, the focus was on one particular university and its transformation in relation to the wider structure in which it is located. The regional agenda and the new institutional mechanisms to respond to the new policy environment have been developing within the University of Birmingham as a player in the West Midlands Region in which it is located. New posts have been created with the aid of national third stream funding in expectation of these persons functioning as ‘boundary spinners’ or ‘animateurs’ within/between different university departments/Schools, between the Schools and the central administration, between universities, and between university and businesses. These functions have had to be integrated into the organisational mechanisms and culture of the University. Many interviewees and others also mention the pressures that university academics are facing. For universities, the issue of individual incentives for academic staff to engage in third-stream activities seems to be one of the most difficult tasks with which to deal. Strengthening performance-based financial incentives may be an example.

In Chapter 7, the specific case of one particular region, the West Midlands Region was examined. As was discussed in Chapter 5, in every region, the RDAs are emphasising the role that higher education can play in the regional development, but

each region differs in terms of the emphasis and the resources available for higher education. The West Midlands is characterised by the recent rapid development of university collaborative mechanisms within the Region. The chapter delineated the characteristics of the different markets of different universities and the different ways in which each institution has responded to the recent government higher education policies promoting third stream activities. The emergence and development of recent HE collaborative mechanisms in the growing multi-level-governance structure of the knowledge economy in the West Midlands Region provided some empirical evidence on the *rhetoric* and *reality* of networks (see Chapter 2, p.38-9).¹

The collaborative mechanisms have taken very different forms in different regions. In Chapter 8, the central issues concerned the different forms of networks as strategic alliances developed in the nine English regions. These took the form of Regional Higher Education Associations (HERAs) and other more *ad hoc* higher education consortiums. The relationships between these collaborative networks and RDAs were investigated. In all English regions, regional innovation systems in the MLG structure of the knowledge economy are under construction. In all English regions, universities are positioning themselves as the main actors as part of knowledge ‘generation-exploitation’ sub-systems.

Different spatial models of knowledge ‘generation-exploitation’ sub-systems can be identified in different regions (see Chapter 8, p.306). In some regions, new mechanisms linking knowledge exploitation and knowledge generation have been built by recent government initiatives such as HEROBC, SEC and HEIF, and these are integrated as part of international links that the organisations in the regions have been

¹ Networking as rhetoric or discourse exists in a number of regional strategy documents (e.g. *WMRIS*) published by the RDA. In practice, network relationships are under constraints because of short-term

developing. The South East and East of England, with strong knowledge generation subsystems, especially benefit from links with international connections through the international excellence of university research and links with multinationals. Some of the regions (the North East and, Yorkshire and Humber), especially with those areas supported by the European Structural Funds, have a long history of university collaboration, but the advent of RDAs, devolution of government and third stream initiatives since the late 1990s have strengthened these ‘bottom-up’ initiatives of universities, and have integrated these initiatives as part of the strategic construction of regional innovation systems led by RDAs and other regional partners. Each region is building its own strategically selective networks between the regional and non-regional players. For example, the North West Region established the first Regional Science Council in England. The creation of such an intermediary organisation which links knowledge generation and exploitation sub-systems has to be seen as a network as a strategic alliance set against the background of North-South disparities of the knowledge economy in the UK.

10-2 CONTRIBUTIONS AND LIMITS

Theoretical Insights

This thesis has taken the strategic-relational approach to networks following the frameworks developed by Jessop(2001) and Hay (1998; 2002) and, applied it to empirical cases. Networks are seen as *strategic alliances*, and as such, strategic actions and contexts influence both the structure and the actors in the dialectical processes of change (see Chapter 2, p.39). Networks need to be seen as constantly under construction, with strategic actors strategically selecting their contexts: choosing network or not to

financial support and lack of coordination. Nevertheless, networks take different forms and can be regional assets if they are strategically coordinated and sustained.

network; who to network with; what to network about; and how much sovereignty to risk pooling in the network (Hay, 1998:45; see also Chapter 2, p.40). Networks involve power relationships, and are institutionally constructed as geographical accomplishments within ‘power geometry’ (see Chapter 2, p.41).

The concept of networks as *strategic alliances* proved to be useful and robust enough to highlight the dynamic processes of the institutionalisation processes set within the ‘regionalisation’ of the knowledge economy. By applying the strategic-relational approach to networks, factors that make institutionalisation processes dynamic have been identified. One of the strengths of this approach is that the interactions between policy and institutional actors are highlighted by identifying both structural and agency factors that influence institutional and individual behaviour (Chapter 9, p.317).

Combined with concepts developed in organisational studies, such as organisational fields and circuits of power (Chapter 2, p.34-5), the SRA applied to networks in this thesis has illuminated the convergence as well as divergence between organisations in the organisational fields of regional development and higher education with different dimensions of power. Both actors themselves and the organisational fields in which they are located are influencing each other and going through fundamental shifts (see Chapter 9, p. 324-5). Both universities and their regional partners are transforming themselves as strategic actors, and the region emerges as a new strategically selective spatial context in the MLG structure of the knowledge economy where network relationships are formed.

The strategic-relational approach to networks has been applied to the concept of regional innovation systems.² The concept of regional innovation systems has been employed in this thesis as a theoretical framework to encompass multi-scale, multi-layered, horizontal and vertical institutional processes within a MLG structure. The thesis has argued that regions can be seen as multi-spatial innovation systems in which, through network relationships, knowledge flows between different geographical scales, and collective learning takes place between organisational fields involving different spatial contexts. As has been mentioned several times throughout the thesis, universities' priorities as to their activities are not necessarily determined by their geographical location. Strategic choice in an organisation is a combination of its history, resources, business models and the potential opportunities for the organisation, many of which are determined by markets, systems of governance, and government policies (see Chapters 6 and 7). Networks are always under construction, sometimes contested, and in the state of constant change. Thus, the thesis highlighted the dynamic institutionalisation processes involved in the formation of regional innovation systems in the multi-level governance structure of the knowledge economy.

Methodological Contributions

The methodological approach taken in this thesis had three aspects. This study combined two areas of academic, policy and practical areas of expertise, namely 'higher education policy research' and 'regional development policy research' and, principally, the study adopted a qualitative research methodology set within three organisational fields in different spatial settings (i.e. The University of Birmingham, the West Midlands Region and, nine English regions).

² Existing literature on innovation systems tends to have either national or regional focus rather than drawing attention to the links between different scales of systems (see Chapter 3, p75-6). Some recent works (e.g. Cooke et al., 2000a) link the concept of multi-level governance to regional innovation systems.

Firstly, in the field of higher education policy research, existing case studies provide perspectives on the appropriateness of individual university organisations in terms of their design and management. However, little of the literature has paid attention to mechanisms of inter-organisational collaboration in the growing areas of third stream activities in relation to government policy initiatives in the light of the spatiality of university activities. This study provided an inter-organisational perspective into the cooperation between universities at a regional level, with detailed case study within one region, supplemented by other eight regional case studies.

Secondly, in relation to regional development policy research, the thesis intentionally took a wide approach in terms of the conceptualisation of 'regional development' (see Chapter 1, p.21). Much of the literature regarding the university's contribution to local economic 'competitiveness' has been concerned with two rather narrow issues: either 'econometric analysis of the multiplier associated with university staff and student spending in the local economy', or with the role of universities in 'technological transfer' such as the creation of spin-off companies and the establishment of science parks. In Thanki's terms, by focusing primarily on economic and financial issues, other important development factors are lost (Thanki, 1999:86). Regional development comprises development of intellectual, social, human and institutional capital, which all leads to regional advantage and competitiveness. This thesis highlighted the role played by universities in all these areas, if not to the full extent possible.

Thirdly, the qualitative research methods used within the three different but complementary spatial settings proved to constitute the unique methodological contribution made by this study. The analysis of the three organisational fields highlighted the socially contested nature of the institutionalisation as it occurs at

different spatial levels. The methods employed to obtain data were multiple.³ In particular, interviews were found to be useful methods to capture the actual forms of networks as they have developed over the last three years, and to illustrate the individual perceptions of actors as part of the institutionalisation processes in the MLG structure of the knowledge economy. By multiple methods of collecting data, the research results were validated and methods were triangulated.

Thus, in terms of both theory and methodology, this study has endeavoured to make a contribution to the social scientific knowledge by applying the strategic-relational approach to networks as strategic alliances. The formation of networks has been analysed set within the concept of regional innovation systems which comprise knowledge generation and exploitation sub-systems. Network relationships as dynamic institutionalisation processes link actors in different spatial contexts as part of the multi-level governance structure of the knowledge economy, in which inter-spatial collective learning occurs between strategic actors, transforming both the actors themselves and the structures within which they are historically located. The empirical findings from the three organisational fields at different spatial settings provided insights into the transformation of institutions - internal change within an institution, interactions between policies and institutions and interactions between institutions - with different forms of power influencing these dynamics of institutionalisation processes. The approach taken in this study has highlighted the actual processes of constructing regional innovation systems within the multi-level governance structure, illuminating restrictions and opportunities made by policies, and individual and institutional actors.

³ These included semi-structured interviews, participation observation at numbers of events, information from conferences and seminars (both international, national and regional/sub-regional), informal conversations, public documents, websites, and archives. See Chapter2.

Limits of the Thesis

Detailed study of the engagement of universities in their region was made in one particular region, namely the West Midlands Region in England. As argued in this thesis, networks are always under construction and in constant change and, therefore, a longitudinal study is needed rather than giving a snapshot of one particular time. Nevertheless, under the given time and resources, it was not practically possible to empirically investigate the development of networks that involve universities over three years even within one region. This was inevitable as this is a very fast developing field and, although empirical data was collected from October 2000 till mostly July 2003, and finally as late as October 2003,⁴ it was not possible to incorporate all the changes into the account.

The comparison with other English regions turned out to be very insightful to locate the network formation occurring in the West Midlands in a comparative perspective. The extent of investigation in other eight regions was not as much as that done in the West Midlands case study. A comparative model of university collaborative mechanisms was developed but, because of the qualitative nature of the research, it was not possible to provide a quantitatively robust comparison.⁵ Further investigation into Scottish and Welsh experiences would also have been useful.

Furthermore, it was not possible to cover all the relevant areas of the two policy research areas, namely, higher education policy research and regional development policy research, in the thesis. First, in terms of higher education policy research, this thesis focused mainly on policy initiatives promoting the third stream activities of

⁴ The final participant observation took place on 6 October 2003 at WMHEA HEIF 2 Conference held at Aston University. Some of the developments in the West Midlands Region were followed up at this event.

⁵ As the main emphasis was on institutionalisation processes and as qualitative research methods were principally employed, more quantitative data such as economic impact of each university in its locality, or collective economic impact of universities in their region were not systematically gathered.

universities and the implication of these activities for regional development through the evolution of university collaborative mechanisms in regions. However, there are other areas to be investigated in order to fully understand the ‘regionality’ of university activities. Second, from the point of view of regional development, universities are only one group of regional players. The relationships with other players such as businesses and investors need to be further investigated in order to fully understand the regional development process undertaken in the current policy contexts. These points are developed further in the section below, ‘the possible future research area’.

10-3 POLICY IMPLICATIONS AND FUTURE RESEARCH AREAS

Relationships between Theory, Policy and Research

One of the objectives of this thesis has been to promote better communication between research and policy on the one hand, and between theory and research evidence on the other through investigating the institutionalising processes of strategic actors. In Chapter 1 (p.19), from the policy and management point of view, three questions were set out:

- What kind of governance mechanisms should be constructed to enhance universities’ responsiveness to industry and social need, especially at a regional level to enhance the competitiveness of their regions?;
- Can all universities in a region be considered as centres of regional economic growth and social development?; and
- What kind of institutional mechanisms does a university need to develop in order to balance the forces of regional/global competition and collaboration?

There are more questions emerging than the answers that can be provided. The key questions that concern most policy makers engaged in regional development seem to be:

how to generate appropriate institutional mechanisms to enhance the competitiveness of regions. Is local economic development supported by universities only the privilege of the most advanced high-tech regions? Can lessons be learned from 'best practices' to less favoured regions? What are the incentive mechanisms for universities as part of national/international innovation/learning systems to foster their regional knowledge economies? From the perspective of policy and management in both higher education and national industrial and science policies, a fundamental question can be raised: how can higher education be made an integral part of national/regional industrial and science strategy? Below, some of the answers to these questions are provided.

Greater engagement between universities and their regional partners can be strengthened by particular resource allocation decisions by governments, universities and regional stakeholders (Garlick and Pryor, 2002:26). In the UK policy context, national policy incentives aimed at encouraging universities to collaborate regionally seem to have worked, in-so-far as these institutions have made collaborative bids and established regional/inter-regional consortia in order to meet the needs of a specific funding scheme. There are opportunities as well as constraints for each university and for each region provided in recent policy initiatives.

The principal theoretical message drawn from the SRA to networks is that structural factors can be transformed through the strategic actions of agents within a strategically selective context. From a regional development policy research point of view, the challenge that universities and their regional partners in English regions are now facing is how to make the existing collaborative mechanisms sustainable, constituting regional innovation systems that form part of the dynamic MLG structure of the knowledge economy. These mechanisms should constitute innovative and entrepreneurial innovation systems linking knowledge generation and exploitation at

different geographical scales. Researchers in both academic communities, i.e. higher education policy researchers and regional development policy researchers, need to communicate and share their academic as well as professional expertise with each other, and with policy communities, to construct a framework for ‘regionalising’ the knowledge economy.

Policy and Institutional Recommendations

The following eight points can be raised as policy and institutional recommendations that arise from this study.

1. Multilateral Partnership

From the institutional perspective developed in this thesis, multilateral partnerships at different geographical scales between the EU, RDAs, GOs, LSCs, HERAs, and HEFCs (not only in England but in the UK),⁶ will provide ‘communicative competencies’ among the organisations across and within the regions.⁷

2. Linking Innovation and Skills

More specifically, as mentioned in Chapter 9, the principal policy implication that this study identifies is the significance of the strengthened linkages between initiatives aimed at (i) regional industrial competitiveness (e.g. cluster development, high-tech corridors) and, (ii) schemes promoting regional skills development⁸ (e.g. graduate retention, widening access, entrepreneurship education from school education to adult

⁶ Cambridge-MIT Institute (CMI) and National Competitiveness Network (NCN) (see Chapters 4 and 5) can be included in this as global-national knowledge alliances.

⁷ For example, a meeting is going to be held between the Chief Executives of RDAs, HEFCE Regional Consultants, the Chief Executive and four Directors of HEFCE and nine HERAs in mid-October 2003 to try to clarify the role of RDAs in the process of new HEIF 2 bidding.

⁸ In the light of skills development in a regional context, further research is needed into the areas of institutional connection between the higher education and further education sector and other organizations which support skills development. The development of a Foundation Degree at HEIs and its link with Further Education Colleges is one of the areas to be studied in relation to widening access agenda and the skills development agenda of the region. Links with LSCs and Sector Skills Councils seem to be important (see Chapter 5).

training, student placements, and CPD) and (iii) labour market agendas (e.g. strengthening regional intelligence in the targeted areas) at regional level. Universities, among other partners, are principal players in this. Policies which allow these mechanisms to happen are needed. For example, incentives and measures are needed to strengthen the links between higher education and the local labour market, filling the skill shortage and enhancing the human capital of the region.⁹

3. Linking Global and Local

Universities fulfil a useful role in bringing in international expertise and feeding it into their region (see Chapter 3, p. 86). Many of the regional development agencies seem not to have recognised the existing international links that the universities have. These links may be one of the resources to be tapped into and can be channels to link global knowledge into regional institutional processes. The role of universities as knowledge institutions needs to be considered in the light of the dynamics of internationalisation of R&D and global research networks (see Howells, 1990; Cooke, 2003 b), as well as parts of the local institutional dynamics of knowledge generation and exploitation.

4. Linking Knowledge, Business and Finance

Collaborative service mechanisms developed by universities in their region, such as knowledge brokerage, can serve to enhance knowledge and technology transfer to local businesses. Furthermore, universities, by combining their different expertises, can create a critical mass to attract new business to their region. At regional development policy level, regional knowledge assets need to be seen as part of the wider strategy for attracting inward investment, and an appropriate financial support to realise this mechanism is necessary.

⁹ These issues need to be linked to provisions for widening participation, community development and regeneration See Chapter 7, p.272.

5. Positioning Internationally

Lessons can be learned not only from international ‘best practice’ but also from ‘unsuccessful practice’ or from different contexts in which other regions and institutions are located. It is important to locate the region/sub-region or the institution internationally as ‘a global player’ rather than positioning itself only within the national context. Creating inter-regional communication mechanisms such as international benchmarking and learning from European partners are ways forward.

6. A New Career Structure within Universities

The senior management of universities needs to recognise the shift in the core businesses of universities, and to integrate the third stream activities as part of the core mission and structure of the university. Human mobility between universities, businesses and public agencies needs to be encouraged, and capacity building networks, both at national and regional levels in relation to the third stream activities (e.g. Praxis, Fulcrum and Cupid; see Chapter 8), need to be developed. The role of new ‘boundary spinners’ needs to be integrated within universities with sufficient incentivisation for success.

7. University Financing and Incentives

In relation to the above point, a further recommendation needs to be addressed to central government in relation to the system of university financing. The current RAE does not sufficiently recognise the third stream activities and the engagement of academic staff in the regional agenda. An appropriate system for evaluating these third stream activities, and the establishment of a permanent and sufficient incentive funding flow which allows the sustainable engagement of universities in these activities are imperative. In achieving this, the complex nature of university activities needs to be recognised. The current simple categorisation such as ‘research-led’ universities and ‘less research-led’

universities can do more harm than good.¹⁰ Furthermore, an incentive mechanism to enhance collaboration needs to be sought after. For example, the Knowledge Exchanges to be created in English regions under HEIF 2 will be significant regional institutional assets if coordinated and maintained in the long term.

8. Building Knowledge Infrastructure and Capacity at Regional Level

Universities as well as individuals need resources if they want to play a significant role in their region as strategic actors. There are roles to be played by regional agencies to provide sufficient funding streams and institutional infrastructure.¹¹ The importance of regional intelligence systems should not be under-emphasised. A catalytic role can be played by RDAs in promoting other intermediary organisations such as Regional Science Councils. Political process of devolution such as the evolution and impact of elected regional assemblies in England needs to be seen as part of regional institutional capacity building.

To sum up, for universities, having clear institutional purposes in relation to their regional stakeholders is the way to start integrating institutional capacity and capability under a sustainable mechanism. Identification of their specific strengths and markets, and gaps in their markets is important. Policy makers, at national, regional and sub-regional and transnational levels, need to consider how to initiate learning processes at both individual and collective level, and make them ongoing. The interests and resources of a variety of actors have to be drawn into both regionalising and globalising systems of innovation, forging interactive links between the processes of globalisation and devolution, and national and local delivery mechanisms, within better governance systems.

¹⁰ See Chapter 4, p. 133.

¹¹ Availability of venture capital and sustainable mechanisms for entrepreneurship activity are two key areas. See Chapter 7, p.264.

Future Research Areas

The thesis has looked at an early seed of what could become a substantial tree in the cross-cutting areas of higher education and regional development in the UK in the light of the diversification of university missions and the transformation of territorial governance structures. The research topic needs to be further investigated with a wider coverage of science policy, innovation policy, and higher education policy involving policy mechanisms at both European, national and regional/sub-regional levels.

From the particular interest of this study, the prospective introduction of permanent third stream funding in England will determine the behaviour of universities and their regional partners and the forms of collaboration between them.¹² Further research is imperative to identify new forms of individual organisational mechanisms for third stream activities and to examine the development of new network relationships within the regions including RDAs, Knowledge Exchanges, Regional Science Councils, and national research councils. These new developments will build upon and, to some extent, be conditioned by, the first phase of network formation between higher education and regional development under New Labour Government at which this thesis has looked. Further empirical study will be needed to identify the appropriate forms of metrics possible for third stream activities, especially in relation to regional development.¹³

In the light of the evolution of the multi-level governance structure of the knowledge economy, the links developing between national, European and international

¹² From the higher education institutional point of view, this thesis could not sufficiently cover the issues of changing funding system of the UK higher education, which is a very important factor in the future development of higher education system in the UK. With regard to the issues concerning research funding, see Chapter 4, p.133; another issues is a proposed introduction of top-up tuition fees in English HEIs, which will influence HEIs in other parts of the UK.

¹³ Another important area in relation to higher education and science policies, is the processes of Europeanisation of research and higher education. Roles of universities need to be considered in relation

science policies and their regional impacts are significant areas to be investigated. The development of regional and multi-spatial network relationships needs to be analysed in relation to the internationalization of R&D and dynamics of global research networks on the one hand and, national disparities of knowledge economies, on the other hand.¹⁴ Therefore, research on policy and institutional mechanisms which link endogenous and exogenous models of regional development in the context of the globalising knowledge economy is needed (see Chapter 3, p.66).

Ongoing processes of political devolution in English regions need to be analysed in relation to the devolution processes taking place in Scotland, Wales and the Northern Ireland, the wider institutionalisation processes in Europe and within the existing web of governance structures operating within the English regions. Regionalisation of the knowledge economy can be achieved when policy initiatives promoting regionalisation (Chapter 5, p.145) and bottom-up processes of regional institutionalisation processes meet for mutual benefits.

CONCLUSION: UNIVERSITIES AND REGIONAL ADVANTAGE

The key question examined in this thesis is: can the new institutional strategies of universities in order to compete in an increasingly globalising market be reconciled with the growing emphasis upon their regional engagement as expressed in various policy discourses? Based on the strategic-relational approach developed by Jessop (2001) and Hay (1998, 2002), the theoretical and methodological approaches taken in this study

to the new European Research Area (ERA), its regional dimension (see CEC, 2001) and also to international links beyond the EU.

have highlighted the actual processes of constructing regional innovation systems within the multi-level governance structure, illuminating the processes of network formation, with opportunities and constraints made by policies as well as individual and collective actors. The thesis highlighted universities' links with regional stakeholders, and the emergence of inter-organisational networks in their regions.

Universities as knowledge institutions affect the knowledge flows between institutional actors at different geographical scales. Thus, there is potential for universities to form collaborative knowledge 'generation-exploitation' sub-systems under regional innovation systems whilst there are problems of strategic coordination and sustainability of collaboration. Regional university collaborative mechanisms evolving in English regions seem to provide potentially fertile strategically selective contexts. This needs to be looked at as part of wider issues of regional disparities within a national context, processes of devolution and in the light of the tensions between different spatial systems of innovation. At the same time, the strategic selectivity of any individual organisations as actors is not necessarily determined by their geographical location and whether the *region* provides the strategically selective context for universities to form *strategic alliances* in depends on whether networks can bring in the new spatial dimension of strategic knowledge formation.

Further incentives as well as infrastructures are needed to develop and make these relationships sustainable. Creating regional advantage with universities involves a dynamic institutionalising process of building networks of knowledge flows, across the different scales at which the knowledge economy is organised. This is conditioned by two inter-related dynamic institutional processes: the markets of higher education and multi-level territorial systems of governance.

¹⁴ Again, further development of Regional Science/Industrial Councils in English Regions with their

Bibliography

- Acs, Z. (2000) 'Introduction' in Acs, Z. (ed) *Regional Innovation, Knowledge and Global Change*. London and New York: Pinter.
- Acs, Z., and de la Mothe, J. (2000) 'Cities, Information and "Smart Holes"' in Acs, Z. (ed) *Regional Innovation, Knowledge and Global Change*. London and New York: Pinter.
- Adams, J. (2002) 'Comparative localization of academic and industrial spillovers' in *Journal of Economic Geography*. Vol.2, pp.253-278.
- Advantage West Midlands, see under AWM.
- Albino, V., Carbonara, N., and Schiuma, G. (2000) 'Knowledge in inter-firm relationships in an industrial district' in *Industry and Higher Education*, 1 December 2000, vol.14, no.6, pp.404-412. IP Publishing Ltd.
- Alexander, T. J. (1996) 'Information needs: the OECD perspective' in Knowledge Bases for Education Policies: Proceedings of a Conference held in Maastricht, the Netherlands on 11-13 September 1995. Paris: OECD.
- Allen, J. (2000) 'Power/economic knowledge: symbolic and spatial formations' in Bryson, J.R., Daniels, P.W., Henry, N., and Pollard, J. (eds.) *Knowledge, Space, Economy* London and New York: Routledge.
- Alter, C. and Hage, J. (1993) *Organizations Working Together*. Newbury Park, CA: Sage.
- Amann, R. (2000) Foreword in H. Davies et. al., (eds.) *What Works? Evidence-based policy and practice in public services*. Bristol: The Policy Press.
- Amin, A. (1995) *Post-Fordism: a reader*. Oxford: Basil Blackwell.
- Amin, A. (1998) 'An Institutional Perspective on Regional Economic Development', Expert Document No.2, Conference on "New Challenges in Regional Policies", Borås, Sweden: OECD.
- Amin, A. (1999) 'An Institutional Perspective on Regional Economic Development' in *International Journal of Urban and Regional Research* Vol.23, pp.365-378.

- Amin, A. and Hausner, J. (eds.) (1997) *Beyond market and hierarchy: interactive governance and social complexity*. Aldershot: Edward Elgar.
- Amin, A., and Malmberg, A. (1994) 'Competing Structural and Institutional Influences on the Geography of Production in Europe' in Amin, A., (ed) *Post Fordism: a Reader*. Oxford: Blackwell.
- Amin, A., and Thrift, N. (1994) 'Living in the Global' in Amin, A. and N, Thrift (eds.) *Globalization, Institutions, and Regional Development in Europe*. Oxford: Oxford University Press.
- Amin, A., and Thrift, N. (1995) 'Globalisation, Institutional "Thickness" and the Local Economy' in Healey, P., Camerson, S. Davoudi, S., Graham, S., and Madani-Pour, A. (eds.) *Managing Cities :The New Urban Context*. Chichester: Wiley.
- Amin, A., and Tomaney, J. (1995) 'The regional dilemma in a neo-liberal Europe' in *European Urban and Regional Studies* 1995 2(2) pp.171-188.
- Angel, D. (2000) 'High-Technology Agglomeration and the Labour Market: The Case of Silicon Valley' in Kenney, M. (ed) *Understanding Silicon Valley: The Anatomy of an Entrepreneurial Region*. Stanford: Stanford University Press.
- Anyardike-Danes, M. et al., (2001) *Labour's New Regional Policy: An Assessment*. Seaford: Regional Studies Association.
- Appadurai, A. (1999) 'Globalization and the research imagination' in *International Social Science Journal* 160, Paris: UNESCO.
- Archer, M. (1990) 'Human agency and social structure: a critique of Giddens' in J. Clark, C. Modgil, S Modgil (eds.) *Anthony Giddens: Consensus and Controversy*. Lewes: Falmer Press. pp.73-84.
- Archer, M. (1995) *Realist Social Theory: A Morphogenetic Approach*. Cambridge: Cambridge University Press.
- Arnold, E. and Teather, S. (2001) *People as Vectors of Technological Capability in Technology, Knowledge and Skills Transfer Schemes*. Brighton, Technopolis.

- Arrow, K. (1962) 'Economic Welfare and the Allocation of Resources for Invention', in Nelson, R., (ed.) *The Rate and Direction of Inventive Activity. Economic and Social Factors*, pp.609-25. Princeton, NJ: Princeton University Press.
- Asheim, B. (1996) 'Industrial districts as "learning regions": a condition for prosperity' in *European Planning Studies*. Vol. 4, No.4, pp.379-400.
- AUEE (2002), *Higher Education and Regional Development in the East of England: Looking Ahead*. A paper for the AUEE Strategy meeting. Cambridge: Association of Universities in the East of England.
- Autio, E. (1998) 'Evaluation of RTD in regional systems of innovation' in *European Planning Studies*. Vol. 6, pp.131-140.
- AWM (Advantage West Midlands) (1999) *Creating Advantage: West Midlands' Economic Strategy*. Birmingham: Advantage West Midlands.
<http://www.advantagewm.co.uk/element101.pdf> 28/09/03
- AWM (2002) *Building a Comparative Advantage: West Midlands Framework for Regional Employment and Skills Action*. Birmingham: Advantage West Midlands.
<http://www.advantagewm.co.uk/element213.pdf> 28/09/03
- AWM (2003a) *Delivering Advantage: West Midlands' Economic Strategy and Action Plan Update.2004-10*. Birmingham: Advantage West Midlands.
<http://www.advantagewm.co.uk/element186.pdf> 28/09/03
- AWM (2003b) *Lambert Review of Business University Collaboration, Response from Advantage West Midlands*, 2003 June. Birmingham: Advantage West Midlands.
- AWM and West Midlands Regional Chamber (2001) *Agenda for Action Summary Spring 2001*. Birmingham: Advantage West Midlands.
- Ayres, S., Mawson, J., and Pearce, G. (2002) 'Institutional collaboration in the West Midlands region' in Tomaney, J., and Mawson, J. (eds.) *England: The state of the regions*. Bristol: Policy Press.
- Baptista, R. (2000) 'Do innovations diffuse faster within geographical clusters?' *International Journal of Industrial Organization* 18, pp.515-535.

- Barley, S. and Tolbert, P. (1997) 'Institutionalization and structuration: Studying the links between action and institution', *Organization Studies*. Vol.18, No.1, pp.93-117.
- Barnett, R. (1990) *The Idea of Higher Education*. Milton Keynes: Open University Press.
- Barnett, R. (1999) *The Limits of Competence: Knowledge, Higher Education and Society*. Milton Keynes: Open University Press.
- Barro, R. (1998) *Determinants of Economic Growth*, Cambridge MA: MIT Press.
- Becker, G.S. (1975) *Human capital: A theoretical and empirical analysis*. Chicago: University of Chicago Press.
- Beesley, M. (1955) 'The birth and death of industrial establishments: experience in the West Midlands conurbation' in *Journal of Industrial Economics*. 4 pp.45-61.
- Beesley, M. (1957) 'Changing locational advantages in the British motor car industry' in *Journal of Industrial Economics*. 6 pp.47-57.
- Benneworth, P. (2001) 'The future for relations between higher education and RDAs' (1999 RSA newsletter article plus additional updated author's note) in Benneworth, P. *Regional Development Agencies: The Early Years*. Seaford: Regional Studies Association.
- Benneworth, P. and Charles, D. (2001) 'Expert or Lobbyist? Universities, The New Regional Agenda and London's Governance' in Syrett, S., and Baldock, R., (eds.) *Governing London: Competitiveness and Regeneration for a Global City*. London: Middlesex University Press.
- Bentley, G. (2000) 'The Automotive Industry: Change and Challenge for the RDAs' in Bentley, B. and Gibney, J. (eds.) *Regional Development Agencies and Business Change*. Aldershot: Ashgate.
- Bentley, G., Collinge, C., Dählstrom, M., Gibney, J., Smith, B., and Tilson, B. (1998) *Opportunity West Midlands: Understanding Change and Development in the Regional Economy*. The University of Birmingham.
- Birmingham G5 Council (1998) *Economic Development Programme 1997/1998*. Birmingham.
- Birmingham Post*, 23 November, 2002.

Birmingham Post, 18 December 2002.

Birmingham Post, 13 September 2003.

Birmingham Voice, freesheet, 2000, 'Welcome to the web'.

Birnbaum, R. (1991) 'American and Dutch Higher Education: The myths and realities of steering, leadership and autonomy', *Tijdschrift voor Hoger Onderwijs*, 9 (3), pp.134-148.

Blackler, F. (1995) 'Knowledge, knowledge work and organizations: an overview and interpretation' in *Organization Studies* 16. pp. 1021-46.

Blair, T. (1998) Foreword in *Building the Knowledge Driven Economy*, London: Department of Trade and Industry.

Bleiklie, I. (2001) 'Towards European Convergence of Higher Education Policy', in *Higher Education Policy*, Vol.13, No.3.pp9-29.

Blunkett, D. (2000) 'Blunkett rejects anti-intellectualism and welcomes sound ideas'. *DfEE News*.

Boulding, K.E. (1985) *The World as a Total System*, Beverly Hills: Sage Publications.

Bourdieu, P.(1986) 'The forms of capital', in *Handbook of Theory and Research for the Sociology of Education*, Richardson, J. (ed) pp.241-258. New York: Greenwood Press.

Braczyk, H-J and Heidenreich, M. (1998) 'Regional governance structures in a globalized world' in Braczyk, H-J, Cooke, P., and Heidenreich, M.,(eds.) *Regional Innovation Systems: The role of governances in a globalized world*. London: UCL Press.

Brennan, J. (1999) 'What Kind of University?' in Brennan, J., Fedrowitz, J., Huber, M. and Shah, T. (eds.) *What Kind of University? : International Perspectives on Knowledge, Participation and Governance*. Buckingham: SRHE and Open University Press.

Brian, A. (1989) 'Competing Technologies, Increasing Returns, and Lock-In by Historical Events,' *Economic Journal* pp.642-65.

Brainard, R. (1993) 'Globalisation and corporate nationality'. *STI Review*. 13. pp.163-190.

Brown, D. (2002) *Regional science: the business connection*. Cambridge: Arthur D. Little.

- Brown, R. (2000) 'Clusters, supply chains and local embeddedness in Fystad', in *European Urban and Regional Studies*, 7 (4), pp.291-306.
- Bryson, J.R., Daniels, P.W., and Henry, N.D., (1996) 'From widgets to where? The Birmingham economy in the 1990s' in Gerrard, A.J. and Slater, T.R. (eds.) *Managing a Conurbation: Birmingham and its Region*. Studley: Brewin Books.
- Bryson, J.R., Daniels, P.W. Henry, N., and Pollard, J. (2000) 'Introduction' in Bryson, J.R., Daniels, P.W., Henry, N., and Pollard, J. (eds.) *Knowledge, Space, Economy* London and New York: Routledge.
- Buesta, F.(2000) 'Adapting the Pattern of University Organisation to the Needs of the Knowledge Economy' in *European Journal of Education*, Vol.35, No.4. pp.403-419.
- Burnet, D. and Smith, K. (2000) 'Lifelong learning: bridging the gap between higher education and employers' needs: The UK Prospects programme – a case study' in *Industry & Higher Education*. Vol. 14 No.5. pp.347-350.
- Burns, T. and Stalker, G.M. (1994) *The Management of Innovation* Oxford: Oxford University Press (1st edn 1961).
- Cabinet Office (1999) *Modernising Government*. Presented to Parliament by the Prime Minister and the Minister for the Cabinet Office by Command of Her Majesty. March 1999.
- Cadbury, D. (2002) 'Installation as Chancellor Birmingham University Tuesday 3rd December 2002'. Transcript.
- Cairncross, F. (1997) *The death of distance: how the communications revolution will change our lives*. London : Orion Business Books.
- Callon, M. (1991) 'Techno-economic networks and irreversibility' in Law, J.(ed) *A Sociology of Monsters: Essays on Power, Technology and Domination*. London: Routledge.
- Camagni, R. (1991) 'Local 'milieu', uncertainty and innovation networks: towards a new dynamic theory of economic space', in Camagni, R., (ed) *Innovation Networks: Spatial Perspectives*. London: Belhaven.
- Carnoy, M. (2000) *Globalization and Educational Reform: What Planners Need to Know* (Fundamentals of Educational Planning, 63) UNESCO Publishing-IIEP

- Carnoy, M. et. al. (1993) *The new global economy in the information age: reflections on our changing world*, Basingstoke: Macmillan.
- Carter, (1994) 'Measuring the Performance of a Knowledge-based Economy' , unpublished paper presented at the OECD conference on Employment and Growth in a Knowledge-based Economy(November) Copenhagen.
- Castells, M.(1994) ' European cities, the informational society, and the global economy', *New Left Review*, 204: 18-32.
- Castells, M.(1996) *The Rise of the Network Society: The Information Age—Economy, Society, and Culture* Vol.1. Oxford: Blackwell.
- Castells, M. and Hall, P. (1994) *Technopoles of the world: the making of twentieth-first-century industrial complexes*. New York: Routledge.
- CEC (Commission of the European Communities) (1995) *The Green Paper on Innovation*. Luxembourg: Commission of the European Communities.
- CEC (1997) *Towards a Europe of knowledge*. Luxembourg: Commission of the European Communities.
- CEC (2001) *Communication from the Commission: The Regional Dimension of the European Research Area*. Brussels, 03.10.2001 COM (2001) 549 final.
- CEC (2003) *The role of the universities in the Europe of knowledge*.
http://europa.eu.int/eurlex/en/com/cnc/2003/com2003_0058en01.pdf access date 02/09/03.
- Chapman, D., Harridge, C., Harrison, J., Harrison, G., and Stokes, B. (2000) *Region and Renaissance: Reflections on planning and development in the West Midlands 1950-2000*. Studley: Brewin Books.
- Charles, D. (2002) 'The evolution of European science and technology policy and its links to the cohesion agenda' in Lawton, Smith, H. (ed) *The Regulation of Science and Technology*. Basingstoke: Palgrave. pp.97-126.
- Charles, D. (2003) 'Universities and territorial development: reshaping the regional role of English universities', *Local Economy*, Vol.18 No.1. pp.7-20.

- Charles, D. and Benneworth, P. (2001) 'Are we realising our potential? Joining up science and technology policy in the English regions' in *Regional Studies*. Vol.35.No.1 pp.73-79.
- Charles, D. and Howells, J. (1992) *Technology Transfer in Europe: Public and Private Networks*. London: Belhaven Press.
- Chatterton, P. and Goddard, J. (2000) 'The Response of Higher Education Institutions to Regional Need' in *European Journal of Education*, Vol.35, No.4. pp. 475-496.
- Chesnais, F. (1988) 'Technical Cooperation Agreements between Firms' in *STI Review* number 4, Paris: OECD. pp. 52-115.
- Chidamber, S., and Kon, H. B. (1994) 'A research retrospective of innovation inception and success: the technology-push, demand-pull question' *International Journal of Technology Management* 9:94-112.
- Clark, B. (1983) *The Higher Education System: Academic Organizations in Cross-National Perspective*. London: University of California Press.
- Clark, B. (1998) *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*. Oxford: Pergamon.
- Clark, B. (2001) 'The Entrepreneurial University: New Foundations for Collegiality, Autonomy, and Achievement' in *Higher Education Management*. Vol. 13, No2, pp. 9-24.
- Clark, P. (2000) *Organisations in Action: Competition between contexts*. London: Routledge.
- Clegg, S.(1994) *Framework of Power*. London: Sage.
- Coffield, F. (2000a) 'Introduction: A critical analysis of the concept of a learning society' in Coffield, F. (ed) *Differing visions of a Learning Society Research Findings Volume 1*. Bristol: Policy Press.
- Coffield, F. (2000b) 'The three stages of lifelong learning: romance, evidence and implementation' in Coffield, F. (ed) *Differing visions of a Learning Society Research Findings Volume 2*. Bristol: Policy Press.
- Coffield, F. and Williamson, B. (eds.) (1997) *Repositioning Higher Education*. Buckingham: Open University Press.

- Cohen, W., Nelson, R., and Walsh, J. (2002) 'Links and Impacts: The Influence of Public Research on Industrial R&D' in *Management Science*, Vol.48, pp.1-23.
- Coleman, J. (1988) 'Social capital in the creation of human capital', *American Journal of Sociology*.vol. 94, supplement S, pp.95-120.
- Collinge, C. (1999) 'Self-organisation of society by scale: a spatial reworking of regulation theory' in *Environment and Planning D: Society and Space*, Vol.17. pp.557-574.
- Collinge, C. and Srbljanin, A. (2002) 'A Network Paradigm for Urban Governance?' in Hambleton, R. et al. (eds.) *Globalism and Local Democracy: challenge and change in Europe and North America*. New York, N.Y.: Palgrave.
- Collis, C. and Roberts, P. (1992) 'Foreign direct investment in the West Midlands: an analysis and evaluation', *Land Economy*, 7, pp.114-130.
- Conceição, P., and Heitor, M. (1999) 'On the Role of the University in the Knowledge Economy' in *Science and Public Policy*. Vol.26. no.1. pp.37-51.
- Cooke, P. (ed) (1989) *Localities: The Changing face of urban Britain*. London: Urwin Hyman.
- Cooke, P. (1998) 'Introduction: origins of the concept' in Brabzyk, H-J, Cooke, P., and Heidenreich, M. (eds.) *Regional Innovation Systems: The role of governances in a globalized world*. London: UCL Press.
- Cooke, P. (2000) 'Business Processes in Regional Innovation Systems in the European Union' in Acs, Z. (ed.) *Regional Innovation, Knowledge and Global Change*. New York: Pinter.
- Cooke, P. (2002) *Knowledge Economies: Clusters, learning and cooperative advantage*. London and New York: Routledge.
- Cooke, P. (2003a) 'The Regional Development Agency in the Knowledge Economy: Boundary Crossing for Innovation Systems'. Presented at 43rd European Regional Science Association (ERSA) Congress "'Peripheries, Centres & Spatial Development in the New Europe"'at Jyvaskyla, Finland 2003, 27-30 August.
- Cooke, P. (2003b) 'Integrating Global Knowledge Flows for Generative Growth: Life Sciences as a Knowledge Economy Exemplar' to be published in the OECD Report on "Managing International Knowledge Flows" (2003).

- Cooke, P. and Morgan, K. (1993) 'The network paradigm: new departures in corporate and regional development' in *Environment and Planning D: Society and Space*, Vol.11, pp.543-564.
- Cooke, P. and Morgan, K. (1998) *Economies of association*. Oxford: Blackwell.
- Cooke, P., Uranga, M., and Etxebarria, M.(1998) 'Regional Systems of Innovation: an evolutionary perspective', *Environment and Planning A*, 30, pp.1563-1584
- Cooke, P., Boekholt, P., and Tödtling, F. (Cooke et al., 2000 a) *The Governance of Innovation in Europe: Regional Perspectives on Global Competitiveness*. London: Pinter.
- Cooke, P., Manning, C., and Huggins, R. (Cooke et al., 2000 b) 'Industrial Liaison and Academic Entrepreneurship in Wales' in *Zeitschrift für Wirtschaftsgeographie*. Düsseldorf.
- Cowan, R., David, P.A. and Foray, D. (2000) 'The Explicit Economics of Knowledge Codification and Tacitness' in *Industrial and Corporate Change*, Vol.9. No.2, pp. 211-253.
- CRE (Association of European Universities), the European Commission and ERT (European Round Table of Industrialists), (1998) *The Dialogue of Universities with their Stakeholders: Comparisons between Different Regions of Europe*.
- Creswell, J.W. (1994) *Research Design: Qualitative and Quantitative Approaches*. London: SAGE publications.
- Cullen, J. (2000) 'Clusters and colaboratories: The myth and reality of institutional learning' in *Industry and Higher Education*, Vol.14, No.6, pp.394-403. IP Publishing Ltd.
- Dählstrom, M., (1999) 'The Role of the Service Sector in the Restructuring of Old Industrial Regions—The Case of the West Midlands', paper presented at 3rd Morovian Geographical Conference CONGEO.
- Davenport, T.H. and Prusak, L. (1998) *Working Knowledge: How Organizations Manage What they Know*. Boston, MA: Harvard Business School Press.
- Davey, R. (2003) *HE Agenda*. (A presentation slides, AWM Learning and Skills Team Away Day, June 2003).

- David, P. and Foray, D. (1995) 'Accessing and Expanding the Science and Technology Knowledge Base', in *STI Review*. Paris: OECD.
- David, P., Mowery, D.C., and Steinmeuller, W.E. (1994) 'University Industry-Research Collaborations: Managing Missions in Conflict' presented at the CEPR/AAAS conference "University goals, Institutional Mechanisms, and the 'Industrial Transferability' of Research", Stanford, CA 18-20 March 1994.
- Davies, C (2002) 'UK's spin-offs reap £3 billion reward' *Times Higher Education Supplement*, 25 October, 2002.
- Davies, C. (2003) 'RDAs "too immature" to foster innovation' *The Times Higher Education Supplement*, March 21.
- Davies, J (1997) 'The Regional University: Issues in the Development of an Organisational Framework' in *Higher Education Management*. Vol. 9, No.3, pp.29-42.
- Davies, J. (1998) 'The Public Role of the University: The Dialogue between different regions of Europe' CRE.
- Davies, H., Nutley, S., and Smith, P. (eds.) (2000) *What Works? Evidence-based policy and practice in public services*. Bristol: The Policy Press.
- Deas, I. and Ward, K. G. (2000). 'From the 'new localism' to the 'new regionalism'? The implications of the Regional Development Agencies for local-regional tensions'. *Political Geography* Vol.19 No.2, pp. 273-292.
- DeBresson, C. and Amesse, F. (1991) 'Networks of innovators: A review and introduction to the issue' in *Research Policy* 20, pp.363-379.
- Deem, R. (2001) 'Globalisation, New Managerialism, Academic Capitalism and Entrepreneurialism in Universities: is the local dimension still important?' in *Comparative Education* Vol. 37. No.1 pp.7-20.
- De Gaudemar, J-P. (1997) 'The Higher Education Institution as a Regional Actor' in *Higher Education Management* Vol.9,No2, pp.53-64.Paris : OECD.
- De la Mothe, J. and Paquet, G. (1998) 'Local and Regional Systems of Innovation as Learning Socio-economies', in de la Mothe, J. and Paquet, G. (eds.) *Local and Regional Systems of Innovation*. Boston, Dordrecht, London: Kluwer Academic Publishers, pp. 1-16.

- Delanty, G. (2001) *Challenging Knowledge: The University in the Knowledge Society*.
Buckingham: SRHE and Open University Press.
- Delors, J. (1996) *Learning: The treasure within*. Paris: UNESCO.
- DETR (Department of Environment, Transport and the Regions) (1997) *Building Partnerships for Economic Prosperity: Sustainable Growth, Competitiveness, and Employment in the English Regions*. The Stationery Office Publications Centre.
- DfES(Department for Education and Skills) (2003) *The Future of Higher Education*.
<http://www.dfes.gov.uk/highereducation/hestrategy/> access date 30/01/03
- Dicken, P. (1992) *Global Shift: The Internationalization of Economic Activity*, second edition.
New York: Guilford.
- Dicken, P. (1999) 'Globalisation-An Economic-Geographical Perspective' in Halal, W.E. and Taylor, K.B. (eds.) *21st Century Economics: Perspectives of Socioeconomics for a Changing World*. Basingstoke: MacMillan.
- Dicken, P. and Thrift, N. (1992) 'The Organization of Production and the Production of Organization', *Transactions of the Institute of British Geographers*. 17, pp. 279-291.
- Diez, M. (2001) 'The Evaluation of Regional Innovation and Cluster Policies: Towards a Participatory Approach' in *European Planning Studies*, Vol.9, No.7.pp. 907-924.
- DiMaggio, P. (1998) 'The New Institutionalism: Avenues of Collaboration'
Journal of Theoretical and Institutional Economics. 154(4). pp. 696-705.
- DiMaggio, P. and Powell, W. (1983) 'The iron cage revisited: institutional isomorphism and collective rationality in organizational fields' *American Sociological Review*. 48, pp.147-160.
- Dobackere, K. and Rappa, M.A. (1994) 'Technological communities and the diffusion of knowledge: a replication and validation' *R&D Management* 24 (4) pp.355-371.
- Dosi, G. (1988) 'Sources, Procedures, and Microeconomic Effects of Innovation', *Journal of Economic Literature*. 26 pp.1120-1171.

- Dosi, G., Teece, D., Chytry, J. (1998) 'Introduction' in Dosi, G., Teece, D., Chytry, J. (eds.) *Technology, Organization, and Competitiveness: Perspectives on Industrial and Corporate Change* New York: Oxford University Press.
- Drilhon, G. (1993) 'University-Industry Relations, Regionalisation, Internationalisation' in *Higher Education Management*, Vol.5, No.3, pp.95-99.
- Drodge, S, Latham, J., and Taylor, P. (2002) 'Draft: West Midlands Universities and Colleges and the Regional Economy'. Transcript.
- Drucker, P.(1989) *The New Realities: in Government and Politics/ in Economics and Business/ in Society and World View*. New York: Harper & Row.
- Drucker, P. (1993) *Post-capitalist Society*, Oxford: Butterworth-Heinemann Ltd.
- Drummond, D. (2000) 'The new University' in Ives, E., Drummond, D., and Schwarz, L., (2000) *The First Civic University: Birmingham 1880-1980*. The University of Birmingham. University Press.
- DTI (Department of Trade and Industry)(1993) *Realising our Potential: A Strategy for Science, Engineering and Technology*. The Stationery Office Publications Centre.
- DTI (1998) *Our Competitive Future: Building the Knowledge Driven Economy*, <http://www.dti.gov.uk/comp/competitive/main.htm> access date 06/02/03
- DTI (2000) *Excellence and Opportunity - a science and innovation policy for the 21st century* . The Stationery Office Publications Centre.
- DTI (2001) *The Business Clusters in the UK: A first Assessment*, DTI.
- DTI and DfEE (2001) *Opportunity for all in a world of change*. The Stationery Office Publications Centre.
- DTI, HM Treasury, and DfES (2002) *Investing in Innovation: A strategy for science, engineering and technology*. <http://www.ost.gov.uk/invest-innov.htm> access date 26/10/03.
- DTI (2003) *The Sustainability of University Research: A consultation on reforming parts of the Dual Support System* (May 2003). DTI.

- Duke, C. (1992) *The Learning University*. Buckingham: Open University Press.
- Duke, C. (1999) 'Lifelong Learning: Implication for the University of the 21st Century' in *Higher Education Management* Vol.11, No.1, pp.19-33.
- Duke, C. (2002) *Managing the Learning University*. Buckingham: Open University Press.
- Dunning, J. (2000) 'Regions, Globalization, and the Knowledge-Based Economy: The Issues Stated' in Dunning, J. (ed.) *Regions, Globalization, and the Knowledge-Based Economy*. Oxford: Oxford University Press.
- The Economist* (1997) 'The Knowledge Factory' 4 October.
- The Economist* (1998) 'Birmingham From workshop to melting pot' 8 August, p22-23.
- Edquist, C. (1997) *Systems of Innovation: Technologies, Institutions, Organizations*. London: Pinter.
- Edquist, C. (2001) 'Innovation policy – A Systemic Approach', in Archibugi, D. and Lundvall, B.(eds.) *The Globalizing Learning Economy*. New York: Oxford University Press.
- EEDA (East of England Development Agency)(2001) *East of England 2010: Prosperity and Opportunity for All*. Cambridge: EEDA.
- Enright, M. 1995, 'Organisation and coordination in geographically concentrated industries', in Raff, D. and Lamoreux, N. (eds.) *Coordination and Information: Historical Perspectives on the Organisation of Enterprise*. Chicago: University of Chicago Press.
- Enright, M. (2000) 'Globalization, Regionalization, and the Knowledge-Based Economy in Hong Kong' in Dunning, J. (ed.) *Regions, Globalization, and the Knowledge-Based Economy*. Oxford: Oxford University Press.
- Erdem, E. and Glyn, A. (2001) 'Jobs deficits in UK regions' in *Oxford Bulletin of Economics and Statistics*, 63, Special Issue: The Labour Market Consequences of Technical and Structural Change.
- Etzkowitz, H. (1989) 'Entrepreneurial Science in the Academy: A Case of Transformation of Norms' *Social Problems*, Vol. 36, No.1, pp.14-27.

- Etzkowitz, H. (1994) 'Academic-Industry Relations: A Sociological Paradigm for Economic Development' in Leydesdorff, L. and Van den Besselaar, P. (eds.) *Evolutionary Economics and Chaos Theory: New Directions in Technology Studies*. London: Pinter Publishers.
- Etzkowitz, H. (2003) 'Research groups as "quasi-firms": the invention of the entrepreneurial university' in *Research Policy*. 32. pp.109-121.
- Etzkowitz, H., and Leydesdorff, L. (eds.) (1997) *Universities and the Global Knowledge Economy: A Triple Helix of University-Industry-Government Relations*. London: Pinter.
- European Commission, (1994) *Who's Who—Value Relay centres*. Luxembourg: Office for Official Publications of the European Commission.
- European Commission (1999) 'Reinforcing Cohesion and Competitiveness through Research, Technological Development and Innovation' in Cobbenhagen, J. (ed) *Cohesion, Competitiveness and RTDI: The Impact on Regions*, Maastricht: Province of Limburg. Pp.144-154.
- Fahey, D.C.C. (1997) 'European Business Innovation Centres as Regional Innovation Systems'. Paper presented at the Regional Studies Association Conference, Frankfurt. September 20-23.
- Financial Times*, 13 May, 2002
- Financial Times*, 21 February, 2003
- Financial Times*, 1 October 2003.
- Flick, U. (2002) *An Introduction to Qualitative Research*. 2nd edition. London: SAGE.
- Florida, R. (2000) 'The Learning Region' in Acs, Z. (ed) *Regional Innovation, Knowledge and Global Change*. London and New York: Pinter.
- Florida, R. (1995) 'Towards the Learning Region' in *Futures*, Vol.27, No.5. pp.527-36.
- Floud, R. (2001) Introductory Presidential Address, to Universities UK conference 'The Regional Mission: Higher Education's Role in the Regions' conference, London 26 June 2001.

- Foray, D., and Lundvall, B-A. (1996) 'The knowledge-based economy: from economics of knowledge to the learning economy' in *Employment and Growth in the Knowledge – Based Economy*, Paris: OECD, pp.11-32.
- Foster, P. (1996) 'Data Collection: Observational Research', in Sapsford, R. and Jupp, V. (eds.) *Data Collection and Analysis*. London: SAGE Publications and The Open University.
- Freeman, C. (1988) 'Japan : a new national system of innovation' in Dovi, G., et al.(eds.). (1988) *Technical Change and Economic Theory*. London: Pinter Publishers.
- Freeman, C. (1991) 'Networks of Innovators: A synthesis of research issues', *Research Policy*, Vol.20, No.5. pp. 499-514.
- Freeman, C. (1992), "Innovation, Changes of Techno-Economic Paradigm and Biological Analogies in Economics", in Freeman, C., *The Economics of Hope: Essays on Technical Change, Economic Growth and the Environment*, Pinter, London and New York, pp. 121-142
- Fryer, R. (1998) *Creating Learning Cultures: Next Steps in Achieving the Learning Age*. Second Report of the National Advisory Group for Continuing Education and Lifelong Learning. London: the National Advisory Group for Continuing Education and Lifelong Learning.
- Fryer, R. (1997) *Learning for the Twenty-First Century*, First Report of the National Advisory Group for Continuing Education and Lifelong Learning. London: the National Advisory Group for Continuing Education and Lifelong Learning.
- Fukuyama, F. (1995) *Trust: The Social Virtues and the Creation of Prosperity*. London: Hamish Hamilton.
- Fuller, C., Bennett, R.J. and Ramsden, M. (2002) 'The Economic Development Role of English RDAs: The Need for Greater Discretionary Power' *Regional Studies*, Vol.36.No.4, pp.421-443.
- Gale, S. (1982) 'Notes on an institutional approach to geography: two dimensional man in a two-dimensional society' in Flowerdew, R. (ed.) *Institutions and Geographical Patterns*. London: Croom Helm. pp. 51-73.

- Garlick, S. and Pryor, G. (2002) *Universities and their Communities: Creative regional development through knowledge-based Engagement* Report prepared for the Department of Transport and Regional Services, Australia, August 2002.
- Gertler, M.(1997) 'The invention of regional culture' in Lee, R. and Wills, J. (eds.) *Geographies of economies*. London: Arnorld. pp. 47-58.
- Gertler, M. (2001) 'Best practice? Geography, learning and the institutional limits to strong convergence' in *Journal of Economic Geography*, Vol.1, pp.5-26.
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., and Trow, M. (1994) *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. London: SAGE.
- Giddens, A., (1984) *The Constitution of Society: Outline of the Theory of Structuration*. Cambridge: Polity Press.
- Gilbert, A., (1988) 'The new regional geography in English and French-speaking countries' *Progress in Human Geography* Vol.12, pp.208-28.
- De Gaudemar, J-P. (1997) 'The Higher Education Institution as a Regional Actor' in *Higher Education Management* Vol.9,No2, pp.53-64.
- Goddard, J. (1997) 'Managing the University/ Regional Interface' in *Higher Education Management*. Vol. 9, No.3. pp. 7-28.
- Goddard, J. (1999) 'How Universities Can Thrive Locally in a Global Economy' in Gray, H. (ed) *Universities and the Creation of Wealth*. Buckingham: SRHE and Open University Press.
- Goddard, J., Charles, D., Pike, A., Potts, G. and Bradley, D. (1994) *Universities and Communities*, London: Committee of Vice-Chancellors and Principals.
- Goddard, J.B. and Chatterton, C. (1999) 'Regional Development Agencies and the knowledge economy: harnessing the potential of universities' in *Environment and Planning C: Government and Policy* Vol.17, No.6, pp.685-699.
- Goedegebuure, L., Kaiser, F., Maassen, P., and de Weert, E. (1994) 'Higher Education Policy in International Perspective: An Overview' in Goedegebuure, L. et al. (eds.) *Higher*

Education Policy: An International Comparative Perspective. Oxford: International Association of Universities and Pergamon Press Ltd.

Goldblatt, D. (2000) 'Introduction' in Goldblatt, D (ed), *Knowledge and the Social Sciences: Theory, Method and Practice*. London: Routledge.

Granovetter, M. (1985) 'Economic Action and Social Structures: the Problem of "Embeddedness"' *American Journal of Sociology* 91, No.3 pp.481-510.

Granovetter, M. (1992) 'Problems of explanation in economic sociology' in N. Nohria and R.Eccles (eds.) *Networks and organisations: Structure, form and action*. pp.25-56. Boston: Harvard Business School Press.

Grabher, G. (1993) 'Rediscovering the social in the economics of interfirm relations' in Grabher, G. (ed.) *The Embedded Firm: On the Socio-economics of Industrial Networks*. New York: Routledge.

Greater Cambridge Partnership (2003) *Annual Conference 6th June, Summary Report*.

Grefe, X. (2001) 'Devolution of training: a necessity for the knowledge economy' in *Devolution and Globalisation*. pp. 159-194. Paris: OECD.

Hagen, R. 'Globalization, university transformation and economic regeneration: A UK case study of public/private sector partnership' in *The International Journal of Public Sector Management*, Vol. 15, No.3, pp204-218.

Hakim C. (2000) *Research Design: Strategies and Choices in the Design of Social Research*. London: Unwin Hyman Ltd.

Halsey, A.H. and Trow, M. (1971) *The British Academics*. London: Faber and Faber.

Hansen, M.T. (1999) 'The search transfer problem: The role of weak ties in sharing knowledge across organizational sub-units' *Administrative Science Quarterly*, 44, 82-111-

Harrison, R.T. and Hart, M. (1999) 'The Nature and Extent of Innovative Activity in a Peripheral Regional Economy' in *Regional Studies*, Vol. 24.5 pp.383-393.

Harvey, D. and Scott, A. (1989) 'The practice of human geography: theory and empirical specificity in the transition from Fordism to flexible accumulation' in Macmillan, B. (ed.) *Remodelling geography*. Oxford: Basil Blackwell. pp. 217-29.

- Hashimoto, T. (1999) 'The Hesitant Relationship Reconsidered: University-Industry Cooperation in Postwar Japan' in Branscomb, L. et al. (eds.) *Industrializing Knowledge*. MIT press.
- Hassink, R. (1996) 'Technology transfer agencies and regional economic development' *European Planning Studies*. Vol. 4, No.2, pp.167-184.
- Hassink, R. (2001) 'The Learning Region: A Fuzzy Concept or a Sound Theoretical Basis for Modern Regional Innovation Policies?' in *Zeitschrift für Wirtschaftsgeographie*. Düsseldorf. 45, 3/4. pp.219-230.
- Hatakenaka, S. (2002) *Flux and flexibility: a comparative institutional analysis of evolving university-industry relationships in MIT, Cambridge and Tokyo* Thesis (Ph.D.) Massachusetts Institute of Technology, Sloan School of Management, 2002.
- Hay, C. (1995) 'Structure and Agency' in March, D. and Stoker, G. (eds.) *Theory and Methods in Political Science*. Basingstoke :MacMillan.
- Hay, C. (1998) 'The tangled webs we weave: the discourse, strategy and practice of networking' in Marsh, D. (ed.) *Comparing Policy Networks*. Buckingham: Open University Press. pp.33-51.
- Hay, C. (2002) *Political Analysis: A Critical Introduction*. London: Palgrave.
- Hay, C. and Marsh, D. (2000) 'Introduction: Demystifying Globalization' in Hay, C. and Marsh, D. (eds.) *Demystifying Globalization*. London: Macmillan.
- HEFCE (Higher Education Funding Council for England) (1995) *Continuing Vocational Education Development Funding: The Outcome*. Circular 11. Bristol: HEFCE.
- HEFCE (1999) *Higher Education in the United Kingdom* January 1999.
http://www.hefce.ac.uk/Pubs/HEFCE/1999/99_02.htm#p12 access date 17/07/03.
- HEFCE (2000a) *Higher Education Reach-out to Business and the Community Fund*. HEFCE 2000/05. Bristol: HEFCE.
- HEFCE (2000b) *Higher Education Reach-out to Business and the Community Fund: Second round funding allocations*. HEFCE 2000/52. Bristol: HEFCE.

- HEFCE (2001a) *Higher Education-Business Interaction Survey*, report by David Charles and Cheryl Conway, Research report 01/68, Bristol: HEFCE.
- HEFCE (2001b) *Higher Education and the Regions*, HEFCE Policy Statement, HEFCE 01/18. Bristol: HEFCE.
- HEFCE (2001c) Responses to Consultation on the HEFCE Policy Statement 'Higher Education and the Regions', HEFCE Policy Statement, HEFCE 01/18. Bristol: HEFCE.
- HEFCE (2002a) *Regional profiles of higher education 2002*. HEFCE 2002/33. Bristol: HEFCE.
- HEFCE (2002b) *Higher Education Innovation Fund: Funding allocations*. HEFCE 2002/04. Bristol: HEFCE.
- HEFCE (2002c) *Evaluating the regional contribution of an HEI: A benchmarking approach*. http://www.hefce.ac.uk/pubs/hefce/2002/02_23/02_23summary.doc 29/05/02.
- HEFCE (2003a) *Higher education-business interaction survey 2000-01* HEFCE 03/11. Bristol: HEFCE.
- HEFCE (2003 b) *HEIF II Funding Proposal Consultation Paper*. HEFCE 03/11. Bristol: HEFCE.
- Held, D. (1991) 'Democracy, the nation-states and the global system' *Economy and Society*, Vol.20, pp.138-72.
- Henkel, M. and Little, B. (eds.) (1999) *Changing Relationships between Higher Education and the State*. London: Jessica Kingsley Publishers.
- Henry, N., and Pinch, S., (2000) '(The) industrial agglomeration (of Mortor Sport Valley): a knowledge, space, economy approach' in Bryson. J.R., Daniels, P.W., Henry, N., and Pollard, J. (eds.) *Knowledge, Space, Economy* London and New York: Routledge.
- Hepworth, M. and Spencer, G. (2003) *Regional Perspective on the knowledge economy in Great Britain: Report for the Department of Trade and Industry*. London: the Local Futures Group.
- Herbert, M., (1990) *Planning a research project: a guide for practitioners and trainees in the helping professions*. London: Cassell.

- HERDA-SW (2001), *The Economic Impact of Higher Education Institutions in the South West on the Regional Economy*. Exeter: HERDA-SW.
- Herrigel, G. (1989), 'Industrial Order and the Politics of Industrial Change: Mechanical Engineering' in Katzenstein, P.J. (ed) *Industry and Politics in West Germany: Towards a Third Republic*. Ithaca, New York: Cornell University Press. pp.185-220.
- HESE (2000) *Business Plan 2000/1 to 2003/4. HESE: Promoting the role of higher education in the South East*. Guildford: HESE.
- HESE (2002) *HESE Newsletter*, May 2002. Guildford: HESE.
- Hirst, P. (1994) *Associative democracy*. Cambridge: Polity Press.
- Hirst, P. and Zeitlin, J. (1991) 'Flexible specialization versus post-Fordism: theory, evidence and policy implications' in *Economy and Society* Vol.20. pp.1-56.
- HM Treasury (2002) *Spending review*
http://www.hmtreasury.gov.uk/Spending_Review/spend_sr02/press/spend_sr02_pressregional.cfm access date 01/02/03.
- Hobsbawm, E., (1994) *Age of Extremes: The Short Twentieth Century, 1914-1991*. London: Michael Joseph.
- Hodgson, G. (1999) *Economics and Utopia: Why the learning economy is not the end of history*. London: Routledge.
- House of Lords Select Committee (2003) *Science and Technology Fifth Report*. July 2003.
<http://www.parliament.the-stationery-office.co.uk/pa/ld200203/ldselect/ldsctech/140/14001.htm> access date 11/10/03.
- Howells, J. (1986) 'Industry-Academic Links in Research and Innovation: A National and Regional Development Perspective' Policy Review Section in *Regional Studies*, Vol.20.No.5, pp. 472-476.
- Howells, J., Neveda, M. and Georghiou, L. (1998) *Industry-Academic Links in the UK*. Bristol: HEFCE.
- Howells, J. (1990) 'The Internationalisation of R&D and the Development of Global Research Networks' in *Regional Studies*, Vol.24.No. 6, pp.495-512.

- Howells, J. (1995) 'Tacit Knowledge and Technological Transfer' ESRC Centre for Business Research Working Paper 16.
- Howells, J., (2000) 'Knowledge, innovation and location' in Bryson, J.R., Daniels, P.W., Henry, N., and Pollard, J. (eds.) *Knowledge, Space, Economy*. London and New York: Routledge.
- Ives, E. (2000) 'Introduction. The University of Birmingham: a case study' in Ives, E., Drummond, D., and Schwarz, L., (2000) *The First Civic University: Birmingham 1880-1980*. The University of Birmingham. University Press.
- Ives, E., Drummond, D., and Schwarz, L., (2000) *The First Civic University: Birmingham 1880-1980*. The University of Birmingham. University Press.
- Jeffery, C. (2003) "Universities, Regional Science Policy and Devolution in the UK", *Towards a Multi-Level Science Policy: Regional Science Policy in a European Context*, RSA and ESRC, London, 8-9 May 2003. Presentation.
- Jarvis, P. (2000) 'The Changing University: Meeting A Need and Needing to Change', *Higher Education Quarterly*, Vol.54, No.1, pp.43-67.
- Jencks, C. and Riesman, D. (1968) *The Academic Revolution*. New York: Doubleday.
- Jensen, C., and Leijon, S. (1996) 'Theorising and conceptualising regions: the West Sweden region—an idea searching for a (re) form' in Alden, J., and Boland, P. (eds.) *Regional Development Strategies: A European Perspective*. London: Jessica Kingsley. pp.14-37.
- Jarratt, A. (2000) 'Foreword' in Ives, E., Drummond, D., and Schwarz, L., (2000) *The First Civic University: Birmingham 1880-1980*. The University of Birmingham. University Press.
- Jessop, B. (1990) *State Theory: Putting the Capitalist State in its Place*. Cambridge: Polity Press.
- Jessop, B. (1992) 'Fordism and post-Fordism: a critical reformulation'. in M. Storper, M. and Scott, A. (eds.) *Pathways to industrialization and regional development*. London: Routledge. pp. 46-69.
- Jessop, B. (1997) 'The entrepreneurial city: re-imagining localities, re-designing economic governance, or re-structuring capital?' in Jewson, N. and MacGregor, S. (eds.)

Transforming Cities: Contested Governance and New Spatial Divisions. pp.28-41.
London: Routledge.

- Jessop, B. (1998) 'The rise of governance and the risks of failure: the case of economic development' in *International Social Science Journal*. 155. pp.29-45.
- Jessop, B. (2001) 'Institutional re(turns) and the strategic-relational approach' in *Environmental and Planning A*, Vol. 33, pp.1213-1235.
- Johnson, B. (1995) 'Institutional Learning' in Lundvall, B-Å (ed.) *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning* London and New York: Pinter.
- Jones, M. (2001) 'The rise of the regional state in economic governance: 'partnership s for prosperity' or new scales of state power?' *Environmental and Planning A*. Vol.33. pp.1185-1211.
- Jones, R. (2001) 'Institutional Identities and the Shifting Scales of State Governance in the United Kingdom' in *European Urban and Regional Studies* Vol.8, No.4, pp.283-296.
- Jones, M., and MacLeod, G. (1999) 'Towards a regional renaissance? Reconfiguring and rescaling England's economic governance' in *Transactions of the Institute of British Geographers* Vol. 24, No.3, pp.295-313.
- Jones-Evans, D., Klofsten, M., Andersson, E., and Pandya, D. (1999) 'Creating a bridge between university and industry in small European countries: the role of the Industrial Liaison Office' in *R&D Management* 29. (1). pp. 47-56.
- Kanter, R.M. (1995) *World Class: Thriving Locally in the Global Economy*. New York: Simon and Schuster.
- Keeble, D. and Lawson, C. (1997) 'Networks, links and large firms impacts on the evolution of clusters of high technology SMEs in Europe : report on presentations and discussions, Barcelona meeting of the TSER European Network on "Networks, collective learning and RTD in regionally-clustered high-technology small and medium-sized enterprises", October 17-18, 1997.
- Keeble, D., Lawson, C., Moore, B., and Wilkinson, F. (1998) 'Collective Learning Processes, Networking and "Institutional Thickness" in the Cambridge Region' in *Regional Studies* Vol.33, pp.319-332.

- Keeble, D. and Wilkinson, F. (eds.) (2000) *High-technology Clusters, Networking and Collective Learning in Europe*. Aldershot: Ashgate.
- Kelly, J. (2003) 'Top research-led universities call on MPs to revise funding proposal' *Financial Times*. 21 February 2003.
- Kennedy, H. (1997) *Learning Works – Widening Participation in Further Education*. London: The Further Education Funding Council.
- Kenney M., von Burg U. (2000) 'Institutions and Economies: Creating Silicon Valley' in Kenney, M. (ed) *Understanding Silicon Valley: The Anatomy of an Entrepreneurial Region*. Stanford: Stanford University Press.
- Knights, D., Murray, F. and Willmott, H. (1993) 'Networking as Knowledge Work: A Study of Strategic Interorganizational Development in the Financial Services Industry', *Journal of Management Studies*, Vol.30, No.6, pp.975-75.
- Kirat, T., and Lung Y. (1999) 'Innovation and Proximity: Territories as Loci of Collective Learning Processes' in *European Urban and Regional Studies* Vol. 6, No.1, pp.27-38.
- Kitagawa, F. (2003) 'New Mechanisms of Incentives and Accountability for Higher Education Institutions: Linking the Regional, National and Global Dimensions' in *Higher Education Management and Policy*. Vol.15, No2, pp.99-116. Paris : OECD.
- Kitagawa, F. (2004) 'Enhancing Regional Knowledge Economies: Universities and Industry-Science Relationships— A comparative perspective from Japan and UK' in Cooke, P. and Piccaluga, A. (eds.) *Regional Economies as Knowledge Laboratories*. Edward Elgar Publishers. Forthcoming.
- Kline, S.J. and Rosenberg, N. (1986) 'An Overview of Innovation' in Landau, R. and Rosenberg, N. (eds.) *The Positive Sum Strategy*. Washington, D.C.: National Academy Press.
- Knight, R.V. (1995) 'Knowledge-based development policy and planning implications for cities' in *Urban Studies* Vol.32, pp.225-60.
- Knights, D., Murray, F. and Willmott, H. (1993) 'Networking as Knowledge Work: A Study of Strategic Interorganizational Development in the Financial Service Industry' in *Journal of Management Studies*, Vol.30, No.6. pp. 975-995.

- Kogan, M. (1996) 'Policy use of the knowledge bases in tertiary education: An overview' in *Knowledge Bases for Education Policies*, Proceedings of a Conference held in Maastricht, the Netherlands on 11-13 September 1995. Paris: OECD.
- Krugman, P.(1991) *Geography and Trade*. Cambridge, Massachusetts: The MIT Press.
- Krugman, P. et al., (1997) *Competitiveness, an international economics reader*. New York: Council on Foreign Relations.
- Lagendijk, A. (2002) 'Policy views on how to create local entrepreneurship: the case of winemaking in Aragón' in *Building Entrepreneurial Capacity in the Regions*. Conference Proceedings of the Regional Studies Association, Annual Conference November 2002.
- Lagendijk, A and Charles, D. (1999), Clustering as a new growth strategy for regional economies? A discussion of new forms of regional industrial policy in the UK Roelandt, T and den Hertog, P (eds.) *Cluster Analysis and Cluster Based Policies in OECD Countries*. Paris: OECD.
- Lagendijk, A. and Cornford, J. (2000) 'Regional institutions and knowledge—tracking new forms of regional development policy' in *Geoforum* 31 pp.209-218.
- Lagendijk, A. and Rutten, R. (2003) 'Associational dilemmas in regional innovation strategy development: regional innovation support organizations and the RIS/RITTS programmes' in Rutten, R., Boekema, F., and Kuijpers, E. (eds.) *Economic Geography of Higher Education: Knowledge infrastructure and learning regions*. London: Routledge.
- Lambert, R. (2003) *Lambert Review of Business-University Collaboration: Summary of Consultation Responses and Emerging Issues*. July 2003.
- Landabaso, M. (1997) 'The promotion of innovation in regional policy: Proposals for a regional innovation strategy', *Entrepreneurship and Regional Development*, No. 9. pp.1-24.
- Landabaso, M. (2000) 'Innovation and Regional Development Policy' in Boekema, F. et al. (eds.) *Knowledge, Innovation and Economic Growth: Learning Regions, Theory, Policy and Practice*. Cheltenham: Edward Elgar. pp .73-94.
- Landabaso, M., Oughton, C., and Morgan, K. (1999) 'Innovation Networks and Regional policy in Europe' Karlsruhe, 18 November 1999.

- Latour, B. (1993) *We Have Never Been Modern*. Hemel Hempstead: Harvester Wheatsheaf.
- Law, J. (1991) *A Sociology of Monsters: Essays in Power, Technology and Domination*. London: Routledge.
- Lawton Smith, H. (1997) 'University and public sector research laboratory links and technology transfer in the Oxford region' in Keeble, D. and Lawson, C (eds.) *University Research Links and Spin-Offs in the Evolution of Regional Clusters of High-Technology in Europe*. Report on Presentations and Discussions, Munich Meeting of the TSER European Network on "Networks, Collective Learning and RTD in Regionally-Clustered High-Technology Small and Medium-Sized Enterprises", February 28-March 1, 1997.
- Lawton Smith, H. (2000) 'Innovation Systems and "Local Difficulties": The Oxfordshire Experiences' in Acs, Z. (ed) *Regional Innovation, Knowledge and Global Change*. London and New York: Pinter.
- Lawton Smith, H. (2002) 'Competitiveness and European regional policy: a Review and Analysis' Paper presented at the Regional Studies Association International Conference on Evaluation and EU Regional Policy: New Questions and New Challenges, Aix en Provence, France, 31 May and 1 June 2002.
- Lawton Smith, H. (2003) 'Universities and Local Economic Development: An Appraisal of the Issues and Practices' in *Local Economy*, Vol.18. No.1. pp. 2-6.
- Lawton Smith, H., and de Bernardy, M. (2001) 'Comparing Oxford and Grenoble: the growth of knowledge clusters in two pioneer regions, dynamics, trends and guidelines', Paper presented to Regional Studies Association International Conference on Regional Transitions: European Regions and the Challenges for Development, Integration and Enlargement, 15-18 September 2002, Gdansk, Poland.
- Leadbeater, C. (1999) *Living on Thin Air: The New Economy*. London: Penguin Books.
- Leonard-Barton, D. (1995) *Well-springs of Knowledge: building and sustaining the sources of innovation*. Boston, MA.:Harvard Business School Press.
- Leydesdorff, L., Cooke, P., and Olazaran, M. (2002) 'Technology Transfer in European Regions: Introduction to the Theme Issue' *Journal of Technology Transfer*, Vol. 27, No.1, pp. 5-13.

- Loftman, P. and Nevin, B. (1996) 'Prestige urban regeneration projects: socio-economic impacts' in A.J. Gerrard and T.R. Slater (eds.) *Managing a Conurbation: Birmingham and its Region*. Studley: Brewin Books.
- Long, N. and Long, A. (1992) (eds.) *Battlefields of Knowledge*. London: Routledge.
- Longworth, N. (1999) *Making lifelong learning work: Learning cities for a learning century*. London: Kogan Page.
- Longworth, N. and Davies, W.K. (1996) *Lifelong learning*. London: Kogan Page.
- Lorenzen, M. (2001) 'Localised Learning and Policy: Academic Advice on Enhancing Regional Competitiveness through Learning' in *European Planning Studies*, Vol. 9, No.2. pp.163-185.
- Lovering, J. (1999) 'Theory Led by Policy: The Inadequacies of the "New Regionalism"(Illustrated from the Case of Wales)' in *International Journal of Urban and Regional Research* 23. pp.379-395.
- Lundvall, B.A. (2001) 'The Learning Economy: Some Implications for the Knowledge Base of Health and Education Systems' in *Knowledge Management in the Learning Society*. Paris: OECD.
- Lundvall, B.A. (ed) (1995) *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London: Pinter Publishers.
- Lynton, E. (1996) 'Internal Constraints to fuller university engagement in regional economic development: Experiences in the USA' in *Industry & Higher Education*. Vol.10. No.2. pp.79-87.
- Lyotard, J-F. (1984) *The Postmodern Condition: A Report on Knowledge*. Manchester: University of Manchester Press.
- Maasen, P. (2000) Editorial in *European Journal of Education*, Vol.35, No.4. pp.377-383.
- MacLeod, G. (2000) 'The learning region in an age of austerity:capitalizing on knowledge, entrepreneurialism, and reflexive capitalism' in *Geoforum* 31 pp. 219-236.
- Malecki, E. (1997) *Technology and Economic Development: The Dynamics and Local and Regional and National Competitiveness*. Harlow: Addison Wesley Longman Limited.

- Malecki, E. (1991) *Technology and Economic Development: The Dynamics of Local, Regional and National Change*. Harlow: Longman.
- Malecki, E. (2000) 'Creating and sustaining competitiveness: Local knowledge and economic geography' in Bryson, J.R., Daniels, P.W., Henry, N., and Pollard, J. (eds.) *Knowledge, Space, Economy* London and New York: Routledge.
- Malecki, E., Oinas, P. and Park, S. (1999) 'On Technology and Development' in Malecki, E. and Oinas, P. (eds.) *Making Connections*. Ashgate: Aldershot.
- Malmberg, A. (1996) 'Industrial geography: agglomeration and local milieu' in *Progressive Human Geography* 20, pp.392-403.
- Malmberg, A. and Maskell, P. (1999) 'Localised Learning and Regional Economic Development' in *European Urban and Regional Studies* 6 (1) pp. 5-9.
- Manion, T. and Flowerdew, R. (1982) 'Introduction: institutional approaches in geography' in R. Flowerdew (ed.) *Institutions and Geographical Patterns*. London: Croom Helm. pp. 1-50.
- Markusen, A. (1987) *Regions: The Economics and Politics of Territory*. Totowa, NJ: Rowman and Littlefield.
- Markusen, A. (1996) 'Sticky places in slippery spaces: a typology of industrial districts' in *Economic Geography*. 72. pp. 293-313.
- Markusen, A. (1999) 'Fuzzy concepts, scanty evidence, policy distance: the case for rigour and policy relevance in critical regional studies' in *Regional Studies*. Vol.33, pp.869-84.
- Marshall, M. and Mawson, J. (1987) 'The West Midlands' in Damestick, P. and Wood, P. (eds.) *Regional Problems, Problem Regions and Public Policy in the United Kingdom*. Oxford: Oxford University Press.
- Martin, R. (2001) 'Geography and public policy: the case of the missing agenda' in *Progress in Human Geography*. Vol. 25, No.2, pp.189-210.
- Martin, R. and Sunley, P. (2003) 'Deconstructing clusters: chaotic concept or policy panacea?' in *Journal of Economic Geography* 3 pp.5-35.

- Martin, R. and Townroe, P. (1992) 'Changing Trends and Pressures in Regional Development' in Townroe, P. and Martin, R. (eds.) *Regional Development in the 1990s*. London: Jessica Kingsley Publishers and Regional Studies Association.
- Maskell, P., and Malmberg, A., (1999) 'The competitiveness of firms and regions: ubiquitification and the importance of localized learning' in *European Urban and Regional Studies* Vol. 6 No.1, pp.9-25
- Masser, I. (1990) 'Technology and Regional Development Policy: A Review of Japan's Technopolis Programme' in *Regional Studies* Vol. 24.No.1, pp.41-53.
- Massey, D. (1993) 'Power-geometry and a progressive sense of place' in Bird, J., Curtis, B., Putman, T., Robertson, G., Ticker, L.(eds.), *Mapping the Futures: Local Cultures, Global Change*. London: Routledge.
- Massey, D. (1995) *Spatial Divisions of Labour: Social Structures and the Geography of Product*. 2nd ed. Basingstoke: Macmillan.
- Massey, D., Quintas, P., and Wield, D. (1992) *High-Tech Fantasies: Science Parks in Society, Science and Space*. London: Routledge.
- Matlay, H. (2000) 'Industry-higher education collaborations within small business clusters: Evidence from UK case studies' in *Industry and Higher Education*, 1 December 2000, Vol.14, No.6, pp.386-393. IP Publishing Ltd.
- Mawson, J. (2000) 'Whitehall, Devolution and the English Regions' in Bentley, B. and Gibney, J. (eds.) *Regional Development Agencies and Business Change*. Aldershot: Ashgate.
- May, T. (2001) *Social Research: Issues, methods and process*. Buckingham: Open University Press.
- McNay, I. (1994) 'The Regional Dimension in the Strategic Planning of Higher Education' in *Higher Education Quarterly*, Vol. 48, No4. pp.323-336.
- McNicol, I.H. (1995) *The Impact of the Scottish Higher Education Sector on the Economy of Scotland*. Glasgow. Committee of Scottish Higher Education Principles.
- Meek, V.L. (2000) 'Uses of Higher Education Policy Research' Inaugural Lecture, 5 December, 2000. http://fehps.une.edu.au/f/r/higher/UNE_surveys/Lynn_inaugural/Meek.pdf
19/11/01

- Middlehurst, R. (1995) 'Changing Leadership in Universities' in Schuller, T. (ed) *The Changing University?* Buckingham: SRHE and Open University Press.
- Miles, M.B. and Huberman, A.M. (1984) *Qualitative data analysis: A sourcebook of new methods*. Beverly Hills, CA: Sage.
- Mitchell, J. (1969) *Social Networks in Urban Situations*. Manchester: Manchester University Press.
- Mitra, J., and Matlay, H. (2000) 'Thematic clustering: Connecting organizational learning in small and medium-sized businesses' in *Industry and Higher Education*, 1 December 2000, vol.14, no.6, pp.371-385. IP Publishing Ltd.
- Molas-Gallart, J. et al. (2002) *Measuring Third Stream Activities: Final Report to the Russel Group of Universities*. Brighton:SPRU.
- Molas-Gallart, J.(2004) 'Measuring and Funding the 'third mission': the UK Policy Debate' in Wink, R. (ed) *Academia-Business Interactions. European Policy Outcomes and Lessons Learnt*, Palgrav: Houndmills. Forthcoming.
- Morgan, B. (2002) 'Higher Education and Regional Economic Development in Wales: An Opportunity for Demonstrating the Efficacy of Devolution in Economic Development' in *Regional Studies*, Vol. 36.No. 1. pp. 65-73.
- Morgan, B., Brooksbank, D., and Connolly, M. (2000) 'The Role of Networking in the New Political Economy of Regional Development' in *European Planning Studies*, Vol. 8, No.3, pp.319-336.
- Morgan, K. (1997) 'The Learning Region: Institutions, Innovation and Regional Renewal' in *Regional Studies*, Vol.31.pp.491-503.
- Morgan, K. and Nauwelaers, C. (eds.) (1999) *Regional Innovation Strategies: The Challenge for Less-Favoured Regions*. The Stationary Office.
- Morgan, K., Rees, G., and Garmise, S. (1999) 'Networking for Local Economic Development' in Stoker, G. (ed.) *The New Management of British Local Governance*. London: Macmillan Press Ltd.
- Moscatti, R. (1993) 'Regional development of the University in Italy' paper presented to European Association of Institutional Research (EAIR), Turku.

- Moulaert, F., and Sekia, F. (2003), 'Territorial Innovation Models: A Critical Survey' in *Regional Studies*, Vol.37, No.3. pp.289-302.
- Mowery, D., and Shane, S., (2002) 'Introduction to the Special Issue on University Entrepreneurship and Technology Transfer' in *Management Science*, Vol. 48, pp.v-ix.
- Murdoch, J. (1997 a) 'Inhuman/nonhuman/human: actor-network theory and the prospects for a nondualistic and symmetrical perspective on nature and society' in *Environment and Planning D: Society and Space*. Vol.15, pp.731-756.
- Murdoch, J. (1997 b) 'Towards a geography of heterogeneous associations' in *Progress in Human Geography*, Vol. 21, No.3, pp.321-337.
- Nahapiet, J. and Ghoshal, S. (1998) 'Social capital and intellectual capital and the organizational advantage' in *Academy of Management Review*, Vol. 23. No.2, pp.242-266.
- NCIHE (National Committee of Inquiry into Higher Education) (1997) (The Dearing Report) *Higher Education in the Learning Society*. London: HMSO.
- Neave, G. (1995 a) 'The Stirring of the Prince and the Silence of the Lambs: The Changing Assumptions Beneath Higher Education Policy, Reform, and Society', in Dill, D. and Sporn, B. (eds.) *Emerging Patterns of Social Demands and University Reform: Through a Glass Darkly*, Oxford: IAU Press.
- Neave, G. (1995 b) 'On Living in Interesting Times: higher education in western Europe 1985-1995' in *European Journal of Education*. 30. pp.377-393.
- Nelson, R. (1994) 'Economic Growth via the Coevolution of Technology and Institutions' in Leydesdorff, L. and Van den Besselaar, P. (eds.) *Evolutionary Economics and Chaos Theory: New Directions in Technology Studies*. London: Pinter Publishers.
- Nelson, R. (2000) 'National Innovation Systems' in Acs, Z. (ed) *Regional Innovation, Knowledge and Global Change*. London and New York: Pinter.
- Nelson, R. and Rosenberg, N. (1993) 'Technical innovation and national systems' in Nelson, R. (ed) *National Innovation Systems: A Comparative Analysis*. New York: Oxford University Press.
- Newman, J.H., (1996) *The Idea of a University*. New Haven: Yale University press.

- Noll, R. (1998) 'The American Research University: An Introduction' in Noll, R. (ed) *Challenges to Research Universities*. Washington, D.C. : Brookings Institution Press.
- Nonaka, I., and Takeuchi, H. (1995) *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford: Oxford University Press.
- Nishizawa, T. (2002) *Marshall, Ashley on Education of Businessman and 'Science of Business'?* – *Marshall's School of Economics in the Making*, Centre for Historical Social Science Literature, Hitotsubashi University.
- Nutley, S., and Davies, H. (2000) 'Making a reality of evidence-based practice' in H. Davies et al., (eds.) *What Works? Evidence-based policy and practice in public services*. Bristol: The Policy Press.
- NWDA (North West Development Agency)(2002a). *Regional Economic Strategy Review Consultation Document*. Warrington: North West Development Agency.
- NWDA (2002b). *Science Strategy Englandsnorthwest*. Warrington: North West Development Agency.
- NWUA (North West University Association) (2002) *Annual Report 2001/02*. September 2002.Warrington: North West University Association.
- ODPM (2002) *Your Region-Your Choice: Revitalising the English Regions*. ODPM.
- OECD (Organisation for Economic Cooperation and Development) (1996) *Knowledge Bases for Education Policies*. Paris: OECD.
- OECD (1998) *Redefining Tertiary Education*. Paris: OECD.
- OECD (2001a) *Cities and Regions in the New Learning Economy*. Paris: OECD.
- OECD (2001b) *Devolution and Globalisation: Implications for Local Decision-Makers*. Paris: OECD.
- OECD (2001c) *Innovative Networks: Co-operation in National Innovation Systems*. Paris: OECD.
- OECD (2002) *Benchmarking Industry-Science Relationships*. Paris: OECD.

- OECD/IMHE (1999) *The Response of Higher Education Institutions to Regional Needs*. Paris: OECD/IMHE.
- Ohmae, K. (1993) 'The rise if the region state' in *Foreign Affairs* 72 pp.78-87.
- Ohmae, K. (1995) *The End of the Nation State: The Rise of Regional Economies*. New York: Free Press.
- Oinas, P., and Malecki, E. (1999) 'Spatial Innovation Systems' in Malecki, E. J., and Oinas, P (eds.) *Making connections: technological learning and regional economic change*. Ashgate: Aldershot.
- ONE (ONE NorthEast) (1999) *Unlocking Our Potential: The Regional Economic Strategy for the North East*. Newcastle upon Tyne: ONE NorthEast.
- ONS (Office for National Statistics) (1998) *Regional Trends 33*. London: HMSO
- ONS (2000) *Regional Trends 35* London: HMSO
- OST (Office of Science and Technology)(2002) 'Knowledge transfer/exploitation funding'. <http://www.ost.gov.uk/enterprise/knowledge/> access date 22/07/02.
- Oughton, C., Landabaso, M. and Morgan, K. (2000) 'The Regional Innovation Paradox: Innovation Policy and Industrial Policy' in *Journal of Technology Transfer*, Vol. 27, No.2.
- PACEC (2003) *The Cambridge Phenomenon- Fulfilling the Potential*. Cambridge: PACEC. http://www.gcp.uk.net/SITE/UPLOAD/DOCUMENT?GCP_Main_Reoprt.pdf
- Padfield, C. (2002) "Identifying and measuring a university's third stream impact is straightforward- discuss!" http://www.unisdirect.com/conference/programme/presentations/christopher_padfield.pdf access date 31/08/03.
- Park, S. (1995)'Network and Embeddedness in New Industrial Districts: Local and Global Perspectives' in Lee, G. and Kim, Y. (eds.) *Globalisation and Regional Development in South East Asia and the Pacific Rim*. Korean Research Institute for Human Settlements.
- Park, S. (1996) 'Networks and embeddedness in the dynamic types of new industrial districts' *Progress in Human Geography*. 20, pp.476-93.

- Park, S. and Markusen, A. (1995) 'Generalizing new industrial districts: a theoretical agenda and an application from a non- Western economy'. *Environment and Planning A* 27, pp.81-104.
- Patchell, J. and Eastham, T. (2001) Creating University-Industry Collaboration in Hong Kong' in Felsensten, D., and Taylor, M., (eds.) *Promoting Local Growth: Process, practice and policy*. Aldershot: Ashgate.
- Paterson, L. (2001) 'Higher Education and European Regionalism' in *Pedagogy, Culture and Society*, Vol.9, No.2, pp.133-160.
- Pearce, R. (1997) 'The Implications for Host-Country and Home-Country Competitiveness of the Internationalisation of R&D and Innovation in Multinationals' in Pearce, R., *Global Competition and Technology Essays in the Creation and Application of Knowledge by Multinationals*. London: Macmillan Press.
- Perroux, F. (1955) 'Note sur la notion de pole de croissance' *Economie Appliquée*, 8, 307-20; translation in Livingstone, I. (ed) (1971) *Economic Policy for Development*, Harmondsworth: Penguin. pp. 278-289.
- Perry, B. (2003) "'Making Science History": The Regionalisation of Science Policy?' A paper presented at A conference on "Knowledge and Economic and Social Change: New Challenges to Innovation Studies" April 7-9 2003. UMIST, Manchester.
- Peters, G. (1998) 'Policy networks: myth, metaphor and reality' in March, D. (ed.) *Comparing Policy Networks*. Buckingham: Open University Press.
- Philo, C., and Parr, H. (2000) 'Editorial Institutional geographies: introductory remarks' in *Geoforum* 31. pp. 513-521.
- Plotkin, H. (1994) *The Nature of Knowledge: Concerning Adaptations, Instinct and the Evolution of Intelligence*, London: Allen Lane.
- Polanyi, M. (1966) *The Tacit Dimension*. London: Routledge and Kegan Paul.
- Popper, K., (1963) *Conjecture and Refutations*. London: Routledge.
- Porter, M. (1990) *The Competitive Advantage of Nations*. London: Macmillan.

- Porter, M. (1998) 'Clusters and the new economies of competitiveness', *Harvard Business Review*, December. pp.77-90.
- Porter, M. and Ketels, C. (2003) 'UK Competitiveness: moving to the next stage' *DTI Economics Paper*, No.3. May 2003.
- Potter, J., Moore, B. and Spires, R. (2002) 'The wider effects of inward foreign direct investment in manufacturing on UK industry', *Journal of Economic Geography*, 2 pp.279-310.
- Potter, J., Moore, B. and Spires, R. (2003) 'Foreign Manufacturing Investment in the United Kingdom and the Upgrading of Supplier Practices' in *Regional Studies*, Vol. 37, No.1 pp. 41-60.
- Potts, G. (2002) 'Regional Policy and the 'Regionalization' of University-Industry Links: A View from the English Regions' in *European Planning Studies*, Vol.10, No.8, pp.987-1012.
- Pratt, A. (1997) 'The Emerging Shape and Form of Innovation Networks and Institutions' in Simmie, J. (ed.) *Innovation, Networks and Learning Regions?* London: Jessica Kingsley.
- Preto, G., (1995) 'The region as evolutive system' in Bertuglia, C.S., Fischer, M.M., Preto, G. (eds.) *Technological Change, Economic Development and Space*. Berlin: Springer-Verlag: pp. 257-75.
- Putnam, R. (1995) 'Turning in, turning out: the strange disappearance of social capital in America', *Political Science and Politics*. Vol. 28. No.4. pp.664-83.
- Putnam, R. D, Leonardi, R, Nanetti, R.Y. (1993) *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- Reich, R. (1991) *The Work of Nations*, New York: Vintage Books.
- Riddell, S., Baron, S., and Wilson, A.(2000)'The meaning of the Learning Society for adults with learning difficulties: bold rhetoric and limited opportunities' in Coffield, F. (ed) *Differing visions of a Learning Society Research Findings Volume 2*. Bristol: Policy Press.
- Roberts, G. (2003) *Review of Research Assessment Exercises*. May, 2003. <http://www.ra-review.ac.uk/reports/roberts.asp> access date 05/10/03.

- Roberts, P. and Lloyd, M.(2000) 'Regional Development Agencies in England: New Strategic Regional Planning Issues?' *Regional Studies*, Vol.34, No.1, pp. 75-79.
- Robertson, D. (1999) 'Knowledge Societies, Intellectual Capital and Economic Growth' in Gray, H. (ed) *Universities and the Creation of Wealth*. Buckingham: SRHE and Open University Press.
- Robertson, M., Scarborough, H. and Swan, J. (1997) 'Knowledge, Networking and Innovation: A Comparative Study of the Role of Inter- and Intra-organisational Networks in Innovation Processes', Paper submitted to the 13th EGOS Colloquium, Organisational Responses to Radical Environmental Changes, Budapest, 3-5 July 1997, pp.1-2.
- Robertson, M., Scarborough, H. and Swan, J. (2001) 'Knowledge, networking and innovation: Developing the process perspective'. Transcript.
- Robertson, R. (1992) *Globalization*. London: SAGE.
- Robins, K. (1999) 'Foreclosing on the City? The Bad Idea of Virtual Urbanism' in J. Downey and McGuigan, J. (eds.) *Technocities*. London: Sage Publications.
- Rogers, E.M. (1983) *Diffusion of Innovations*. New York: Free Press.
- Rogers, E., (1986) 'The role of the research university in the spinn-off of high technology companies' *Technovation* 4:169-81.
- Rosenberg, A. (1988) *Philosophy of Social Science*, Oxford: Claredon Press.
- Sabel, C. (1989) 'Flexible specialization and the re-emergence of regional economies' in P. Hirst and J. Zeitlin (eds) *Reversing Industrial Decline: Industrial Structure and Policy in Britain and her Competitors*. Oxford: Berg. pp.17-70.
- Sabel, C. (1992) 'Studied Trust: Building New Forms of Cooperation in a Volatile Economy', in Pyke, F. and Sengenberger, W. (eds.) *Industrial Districts and Local Economic Regeneration*. Geneva: International Institute for Labour Studies.
- Sapsford, R. and Jupp, V. (eds.) (1996) *Data Collection and Analysis*. London: SAGE Publications.
- Saxenian, A. (1994) *Regional Advantage: culture and competition in Silicon Valley and Route 128*. Cambridge, Massachusetts: Harvard University Press.

- Schofield Association. (2003) *Review of Framework for Regional Skills and Employment Action FRESAs*. (May 2003).
- Schuetze, H.G. (1996a) 'Knowledge, Innovation, and Technology Transfer: Universities and their Industrial Community' in Elliott, J. et al. (eds.) *Communities and Their Universities: Challenge of Lifelong Learning*. London: Lawrence & Wishart.
- Schuetze, H.G. (1996b) 'Innovation systems, regional development, and the role of universities in industrial innovation'. in *Industry & Higher Education*, Vol. 10. No.2. April 1996. pp. 71-78.
- Schuetze, H.G. (2000) 'Industrial Innovation and the Creation and Dissemination of Knowledge: Implications for University-Industry Relationships' in *Knowledge Management in the Learning Society*. pp. 161-174. Paris: OECD.
- Schumpeter, J.A. (1943) *Capitalism, Socialism and Democracy*, New York: Harper and Row.
- Schutte, F. (2001) 'Entrepreneurship Skills and Incentives' in *STI Review*. pp.144-163. Paris: OECD.
- Schwarz, L. (2000) 'The escape from the hinterland' in Ives, E., Drummond, D., and Schwarz, L., (2000) *The First Civic University: Birmingham 1880-1980*. The University of Birmingham. University Press.
- Schwartz, P., Kelly, E., and Boyer, N. (1999) 'The Emerging Global Knowledge Economy' in *The Future of Global Economy: Towards a Long Boom?* . Paris: OECD.
- Scott, A. (1998) *Regions in the World Economy*. Oxford : Oxford University Press.
- Scott, A. and Stoper, M. (1992) 'Industrialization and regional development' in M. Storper and A.J. Scott (eds.) *Pathways to industrialization and regional development*. London: Routledge. pp.3-17.
- Scott, P. (1995) *The Meaning of Mass Higher Education*. Buckingham: SRHE and Open University Press.
- Scott, P. (1998) 'Massification, Internationalization and Globalization' in Scott, P. (ed) *The Globalization of Higher Education*. Buckingham: SRHE and Open University Press.

- SEEDA(South East Economic Development Agency) (2002a) SEEDA news: 'Regional Development Agencies welcome 'significant' funding boost for science' Guildford: SEEDA. http://www.seeda.co.uk/seeda_news/newsitems/ScienceFunding.htm access date 28/10/02.
- SEEDA (2002b), *Regional Economic Strategy for South East England 2002-2012*. Guildford: South East Economic Development Agency. Guildford: SEEDA. http://www.seeda.co.uk/res/docs/RES_Main_Web.pdf 15/09/03.
- Segal Quince and Partners (1985) *The Cambridge Phenomenon: The Growth of High Technology Industry in a University Town*. Cambridge: Segal Quince and Partners.
- Segal Quince and Wicksteed, see under SQW.
- Shahin, J. (1998) Book Reviews Etzkowitz, H., and Leydesdorff (eds.) (1997) *Universities and the Global Knowledge Economy: A Triple Helix of University-Industry-Government Relations* London: Pinter. in *Millennium* Vol.27.No2 p382.
- Sharp, M. (2001) 'The Need for New Perspectives in European Commission Innovation Policy' Archibugi, D. and Lundcall, B-A. (eds.) *The Globalizing Learning Economy*. Oxford: Oxford University Press.
- Shattock, M. (1997) 'The Mamagerial Implications of the New Priorities' in *Higher Education Management*. Vol.9, No.2. pp.27-34.
- Shattock, M. (1999) 'The Impact of a New University on its Community: The University of Warwick' in Grey, H. (ed) *Universities and Wealth Creation*. Buckingham: Society for Research into Higher Education; Open University Press.
- Shulman, L. (1999) Forward in Brennan, J., Fedrowitz, J., Huber, M. and Shah, T. (eds.) *What Kind of University?: International Perspective on Knowledge, Participation and Governance*. Buckingham: Open University Press.
- Shutte, F. and van der Sijde, P. (eds.) (2000) *The University and its region: Examples of regional development from the European Consortium of Innovative Universities*. Enschede: Twent University Press.
- Simmie, J. (ed) (1997) *Innovation, Networks and Learning Regions?* London: Jessica Kingsley Publishers.

- Slappendel, C. (1996) 'Perspectives on Innovation in Organizations' *Organization Studies* Vol17, No1.
- Slaughter, S., and Leslie, L.(1997) *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. Baltimore: The Johns Hopkins University Press.
- Smith, B.M.D. (2002) *A Hundred Years of Business Studies at the University of Birmingham 1902-2002*. Birmingham: University of Birmingham.
- Smith, B. M.D.and Collinge, C. (2000) 'An Overview of the West Midlands Economy' in Bentley, B. and Gibney, J. (eds.) *Regional Development Agencies and Business Change*. Aldershot: Ashgate.
- Smith, K. (1995) 'Interactions in Knowledge Systems: Foundations, Policy Implications and Empirical Methods' in *STI Review*. 16 pp.69-102.Paris: OECD.
- Smith, N., and Dennis, W. (1987) 'The restructuring of geographical scale: coalescence and fragmentation of the northern core region', *Economic Geography* 63. pp.160-82.
- Spencer, K., Taylor, A., Smith, B., Mawson, J., Flynn, N. and Batley, R. (1986) *Crisis in the Industrial Heartland: A Study of the West Midlands*. Oxford: Clarendon Press.
- Sperling, J. (1998) 'The American For-Profit University: A Model for the Information Economy', in Institute for Economic Affairs, *Higher Education After Dearing*. Oxford: Blackwell.
- SPRU (2001) *SPRU Annual Review 2001-2*
http://www.sussex.ac.uk/spru/publications/annualreport/2000/2_1research.html
- SQW (1988) *Universities, Enterprise and Local Economic Development: An Exploration of Links, Based on Experience from Studies in Britain and Elsewhere*. London: Her Majesty's Stationery Office.
- SQW (2000a) *Cambridge Phenomenon Revisited*. Cambridge: Segal Quince Wicksteed.
- SQW (2000b) *Regionality: Final Report to Higher Education Funding Council for England*. Cambridge: Segal Quince Wicksteed. (April 2000)

- SQW (2001) *Regenerating the West Midlands region: A study to consider opportunities for high technology corridors/clusters Stage One Final report to the Rover Task Force*. Cambridge: Segal Quince Wicksteed. (January 2001)
- Stata, R. (1989) 'Organizational Learning: The Key to Management Innovation' in *Sloan Management Review*, 32, pp.63-74.
- Stehr, N. (1994) *Knowledge Societies*. London: Sage.
- Sternberg, R. (2000) 'University-Industry Relationships in Germany and Their Regional Consequences' in Acs, Z (ed) *Regional Innovation, Knowledge and Global Change*. London and New York: Pinter.
- Sternberg, R. (1996) 'Regional institutional and policy frameworks and the recent evolution of RTD-intensive enterprises in the Munich Region' paper presented at the "Networks, Collective Learning and RTD in Regionally Clustered High Tech Small and Medium Enterprises" Project Meeting, Nice September 27-28 1996
- Steward, F and Conway, S. (1996) 'Informal networks in the origination of successful innovations' in Coombs, R. et al. (eds.) *Technological Collaboration: The Dynamics of Cooperation in Industrial Innovation*. Cheltenham: Edward Elgar.
- Stewart, T. (1997) *Intellectual Capital: The New Wealth of Organizations*. New York: Doubleday.
- Stokes, B. (2000) 'The 1970s—The Changing Agenda: Overview' in Chapman, D. et.al. (eds.) *Region and Renaissance: Reflections on planning and development in the West Midlands 1950-2000*. Warwick: Brewin Books.
- Storper, M. (1992) 'The limits to globalization: technology districts and international trade', in *Economic Geography*, 68, pp.60-93.
- Storper, M. (1995) 'The resurgence of regional economics, ten years later: the region as a nexus of untraded interdependencies', in *European Urban and Regional Studies* 2 pp.191-221.
- Storper, M. (1997) *The Regional World: Territorial Development in a Global Economy*. New York: The Guildford Press.
- Storper, M. and Scott, A.J. (1995) 'The wealth of regions: market forces and policy imperatives in local and global context', *Futures*, 27, pp.505-526.

- Storper, M., and Walker, R., (1989) *The Capitalist Imperative: Territory, Technology and Industrial Growth*. Oxford: Basil Blackwell.
- Sugden, R. and Wilson, J. (2001) 'Globalisation, the New Economy and Regionlisation', *L'institute* Discussion Paper 16, University of Birmingham, Ferrara and Wisconsin-Milwaukee.
- Taylor, M. (1976) 'Linkage Change and Organisational Growth : The Case of West Midlands Ironfoundry Industry' in *Economic Geography* 54, pp.314-336.
- Taylor, M. (2001) 'Enterprise, Embeddedness and Local Growth: Inclusion, Exclusion and Social Capital' in Felsensten, D., and Taylor, M., *Promoting Local Growth: Process, practice and policy*. Aldershot: Ashgate.
- Thanki, R. (1999) 'How do we know the value of higher education to regional development?' in *Regional Studies*, Vol. 33, No.1.pp.84-89,
- Thomas, K.(1999)'The metropolitan planning experience' in Roberts, P., Thomas, K., and Williams, G., (eds.) *Metropolitan Planning in Britain: A Comparative Study*. pp.213-234.London: Jessica Kingsley.
- Thomas, K. (2000) 'Creating Regional Cultures of Innovation? The Regional Innovation Strategies in England and Scotland' in *Regional Studies*, Vol.34.No.2. pp.190-198.
- Thrift, N. (1996) *Spatial Formations*. London: SAGE publications.
- Thrift, N. (2000) 'State Sovereignty, Globalization and the Rise of Soft Capitalism' in Hay, C. and Marsh, D. (eds.) *Demystifying Globalization*. London: Macmillan Press.
- Thurow, L. (2000) 'Globalization: The Product of a Knowledge-Based Economy' in *The Annals of the American Academy* 570, pp.19-31.
- Thwaites, A.T., Oakeley, R.P. and Nash, P. (1981) *Industrial Innovation and Regional Development* Final Report to the Department of the Environment, Centre for Urban and Regional Development Studies, University of Newcastle upon Tyne.
- Tichy, N., Tushman, M. and Fomburn,C. (1979) 'Social Network Analysis for Organisations' in *Academy of Management Review*.Vol.4, No.4, pp.507-519.

- Tighe, C. (2003) 'Science minister plays down claims of regional bias in funding' *Financial Times*, July 18 2003.
- Tilson, B. (1998) The Drive for Change in the Automotive Components Sectors and Implications for Supplies in the West Midlands Region, *West Midlands Research Report*, No 5, Birmingham: Centre for Urban and Regional Studies, University of Birmingham.
- Times Higher Education Supplement*, (2000) 'Big-name merger looks set for Brum' 14 April.
- Tomaney, J. (2002) 'Introduction' in Tomaney, J. and Mawson, J, (eds.) *England: The state of the regions*. Bristol: Policy Press.
- Townroe, P., and Martin, R. (eds.) (1992) *Regional Development in the 1990s: The British Isles in Transition*. London: Jessica Kingsley Publishers Ltd and Regional Studies Association.
- Tushman, M.L. and Scanlan, T.J. (1981) 'Boundary Spanning Individuals: Their Role in Information Transfer and Their Antecedents'. *Academy of Management Journal*, Vol. 24, No.1.
- Universities UK (2003) *Funding research diversity: The impact of further concentration on university research performance and regional research capacity*. London: Universities UK.
- Universities UK/HEFCE (2001a) *The Regional Mission: The regional contribution of higher education. National report*. London: Universities UK.
- (2001b) *The Regional Mission: The regional contribution of higher education. The West Midlands*. London: Universities UK.
- (2001c) *The Regional Mission: The regional contribution of higher education. The North East*. London: Universities UK.
- (2001 d) *The Regional Mission: The regional contribution of higher education. The North West*. London: Universities UK.
- (2001e) *The Regional Mission: The regional contribution of higher education. The South West*. London: Universities UK.

- (2001f) *The Regional Mission: The regional contribution of higher education. South East*. London: Universities UK.
- (2001 g) *The Regional Mission: The regional contribution of higher education. London*. London: Universities UK.
- The University of Birmingham (2000) *The Bulletin* 17 January 2000 No. 766.
- The University of Birmingham (2002) *The University Plan 2002-7: Shaping the Future from a Tradition of Excellence Big, Broad and Best*.
- The University of Birmingham, Research and Enterprise Services (2002), *Annual Report 2002*. (December 2002)
- The University of Birmingham (2002), *Calendar and Directory of Information*.
- The University of Birmingham (2002), *Facts and Figures 2002-3*.
- Valentin, E.M. (2000) 'University-industry cooperation: a framework of benefits and obstacles' in *Industry and Higher Education* Vol. 14. No.3. pp.165-172.
- Valler D, Wood, A. and North, P. (2000) 'Local governance and local business interests: a critical review' in *Progress in Human Geography* 24. pp. 409-27.
- Van Langenhove, L. (2001) 'Can the social sciences act as an agent of change in society?' in *Social Sciences for Knowledge and Decision Making*, Paris: OECD. pp.15-21.
- Varga, A. (2000) 'Universities in Local Innovation Systems' in Acs,Z (ed) *Regional Innovation, Knowledge and Global Change*. London and New York: Pinter.
- Vessuri, H. (2001) 'Introduction: Science and its Culture' in *International Social Science Journal*. No. 168. pp.179-185.
- Vickers, I. and North, D. (2000) 'Regional Technology Initiatives: Some Insights from the English Regions'. *European Planning Studies*, Vol. 8, No.3 pp.301-318.
- Von Hippel, E. (1988) *The Sources of Innovation*. New York: Oxford University Press.
- Waters, R. and Lawton Smith, H. (2002) 'Regional Development Agencies and Local Economic Development: Scale and Competitiveness in High-technology Oxfordshire and Cambridgeshire' in *European Planning Studies*, Vol.10, No.5, pp.633-649.

- Webb, D. and Collis, C. (2000) 'Regional Development Agencies and the 'New Regionalism' in England', in *Regional Studies*, Vol.34, No.9.pp.857-864
- Williams, E. (2002) 'Does a university need a limited company to manage its commercial exploitation opportunities?' December 2002. The University of Warwick. Transcript.
- Willinsky, J. (2000) *If Only We Knew: Increasing the Public Value of Social Science Research*. London: Routledge.
- WMHEA (2002) *WMHEA The West Midlands Higher Education Association*. Wolverhampton: WMHEA. June 2002.
- WMRIS (West Midlands RIS Steering Group) (1998) *West Midlands Regional Innovation Strategy and Action Plan: Shaping our future*.
- Wolfe, D. (2001) 'Social Capital and Cluster Development in Learning Regions' Paper presented at SPRU, University of Sussex 26th October 2001.
- Wood, A. and Valler, D. (2001) 'Guest Editorial' in *Environmental and Planning A*. Vol.33 pp.1139-1144.
- Woolcock, M. (1998) 'Social Capital and economic development: Towards a theoretical synthesis and policy framework' in *Theory and Society* 27. pp.151-208.
- Woolcock, M., and Narayan, D. (2000) 'Social Capital: Implications for Development Theory, Research, and Policy'. *World Bank Research Observer*. Vol.15, (2) pp. 225-49.
- The World Bank (1998) *World Development Report*. Washington D.C.: World Bank.
- Yeung, H.W.-C. (1994) 'Critical reviews of geographical perspectives on business organization and the organization of production: towards a network approach' in *Progress in Human Geography*. Vol. 18, No.4, pp. 460-490.
- Yin, R. (1994) *Case Study Research: Design and Methods*. 2nd edition. London: SAGE.

Appendices

Appendices

Appendix 2

Appendix 2.1 List of Interviewees

The University of Birmingham

The following categories of interviewees are included:

- Senior management (Vice-Chancellor, Pro-Vice-Chancellors, Registrar and Secretary)
- Central Business Development Officers (Research and Enterprise Services including a Teaching Company Scheme (TCS) officer and European and regional officer)
- HEROBC (Higher Education Reachout to Business and Communities) outreach fellows
- Academics with TCS experience
- Academics with European Regional Development Fund (ERDF) experience
- Academics with regional links (e.g. School of Public Policy; Business School; Department of Environmental Sciences and Geography)
- Technology transfer officers (BRDL)
- Widening participation officers
- Other key administrative personnel (e.g. public relations; career centre; international liaison officer)

	Title (as of the time of interview) and Name of the Office
1	Registrar and Secretary
2	School of Public Policy
3	Assistant Director (Business Development), Research and Enterprise Services
4	HEROBC Outreach Fellow, School of Civil Engineering
5	Reachout Programme, Farcroft College
6	Director, Research and Enterprise Services
7	Pro-Vice-Chancellor; 2003- Vice Principal, External relations
8	Institute of Local Government Studies, School of Public Policy
9	Pro-Vice-Chancellor, Research and technology transfer
10	Birmingham Business School
11	Wave Solutions (located in Electronic Engineering)
12	Regional Industry Collaboration Manager, Research and Enterprise Services
13	School of Engineering
14	Vice-Chancellor (1996-2001)
15	Deputy Director; IRC
16	European Institute, ESRC Devolution Programme
17	IPR Licensing Manager, BRDL
18	HEROBC Lifelong learning Manager
19	School of Engineering
20	Teaching Company Scheme Manager, Research and Enterprise Services

Contact names have
been removed from
this web version

21	Director, Regional Programme and Development, School of Professional and Continuing Education (PACE)
22	Careers Centre
23	Director, Regional Innovation Observatory
24	Business Development Manager, Nanoscale Physics Research Laboratory School of Physics and Astronomy
25	Birmingham Business School
26	Deputy Director, The Japan Centre
27	Deputy Director, Centre for Environmental Research and Teaching
28	Director, Public Relations
29	HEROBC Outreach Fellow, Computer Sciences
30	Pro-Vice-Chancellor, Students and Quality
31	The Assistant Director, UNIVERSITAS 21 Secretariat
32	European and Regional Officer, Research and Enterprise Services
33	School of Public Policy
34	Administrator, IRC in Materials for High Performance Applications
35	Head, School of Public Policy
36	HEROBC Outreach Fellow, School of Earth Sciences
37	School of Geography and Environmental Science; Educational Group, MIE
38	Deputy Director, Research and Enterprise Services
39	Access Officer, PACE
40	Enterprise IPR Licensing Executive, BRDL
41	Director, Widening Participation Unit
42	European Institute

Contact names have been removed from this web version

N.B. The names are listed in alphabetical order. The titles are as of the time of the interviews. When the name of the office has changed (e.g. from RSBD to Research and Enterprise Services), the new name of the office is written.

The West Midlands Region

There are three groups of interviewees:

1) Interviews at individual HEIs; 2) Interviewees at Regional collaborative HE mechanisms/programmes in the West Midlands; and 3) Interviewees at regional bodies, local authorities, partnerships, interface etc. in the West Midlands Region.

Interviews at individual HEIs

	Names of HEIs	Title and Office
1	Aston	Business Development Manager; Business Partnership Unit
2	Aston	Director, Business Partnership Unit
3	Aston	Aston Business School

4	Aston Science Park	Birmingham Technology Limited
5	Aston Science Park	Birmingham Technology Limited
6	Aston Science Park ; Aston	TCS Manager for Aston, UCE and Birmingham Until March 2001; Business Partnership Unit
7	Coventry	Pro Vice Chancellor
8	Coventry	Project Officer; Business Partnership Unit; Commercial Affairs Department
9	Coventry	SAIL Manager, Coventry University Enterprises
10	Coventry	Centre for Local Economic Development
11	Coventry	Centre for Local Economic Development
12	Coventry	Head of Consultancy Centre for Local Economic Development
13	Coventry	Project Manager, Centre for Lifelong Learning, Widening Participation collaborative project
14	Harper Adams	Lecturer
15	Harper Adams	HEROBC Coordinator
16	Harper Adams	Senior lecturer in economics
17	Keele	Head of External Relations within the University Secretary's Office
18	Keele	Research Development Manager
19	Keele	Business Development Manager <i>Keele in Business</i>
20	Keele	Marketing Manager TCS
21	Newman College of Higher Education	Head of English Language Training
22	Newman College of Higher Education	Project Officer, HEROBC
23	Staffordshire	Head of Regional and Commercial Development, Regional Office
24	Staffordshire	Business Development Manager, Research and Commercial Office
25	Staffordshire	TCS Research and Commercial Office
26	UCE	Director Corporate Development Centre

Contact names have been removed from this web version

27	UCE	Outreach Project Manager Corporate Development Centre
28	UCE	Outreach agent Corporate Development Centre
29	UCE	Outreach agent Corporate Development Centre
30	UCE	Knowledge Management Centre
31	UCE	ADAPT programme
32	UCE	Director, Enterprise Research and Development Centre
33	UCE	Director, Centre for Research into Quality
34	Warwick	Director, Research and Development Services Office Business & Regional Support Unit
35	Warwick	Director Centre for Small and Medium Sized Enterprises
36	Warwick	Warwick Science Park
37	Warwick	International Office Senior International Liaison Officer
38	Warwick	Regional Link Officer Business and Regional Support Unit
39	Warwick	Business and Regional Support Unit
40	Warwick	Widening Participation collaborative project
41	Wolverhampton	Pro-V-C, Research; until October 2002- Co-ordinator WMHEA
42	Wolverhampton	The Office for External Development Enterprise Development Manager
43	Wolverhampton	Manager; The Competitiveness Centre Telford Campus

Contact names have
been removed from
this web version

Interviews on Regional collaborative HE mechanisms/programmes in the West Midlands

	Institution	Office
1	WMHEA (based at Wolverhampton)	Director WMHEA
2	West Midlands P4P (based at Wolverhampton)	Regional Coordinator, Partnership for Progression/Aim Higher

3	CONTACT	CONTACT Manager
4	CONTACT	CONTACT Field Officer Staffordshire and Shropshire
5	CONTACT	CONTACT Field Officer Birmingham and Solihull
6	Mercia Institute of Enterprise (based at Warwick)	Director of Mercia Institute of Enterprise
7	Mercia Spinner (based at Warwick)	Director of Warwick Ventures; Mercia Spinner

Contact names have been removed from this web version

Regional bodies, local authorities, partnerships, interface etc. in the West Midlands

	Institution	Title and Office
1	AWM	Head of Innovation
2	AWM	Development Advisor, Learning and Skills
3	Coventry City Council	Head of Regeneration
4	Coventry Solihull Warwickshire Partnership	Secretariat, Coventry Solihull Warwick-shire Partnership
5	GOWM	Black Country Team, GOWM
6	GOWM	GOWM
7	GOWM	GOWM
8	HEFCE	Regional Consultant, West Midlands region, HEFCE
9	Learning and Skills Council - Shropshire	Executive Director LSC, Shropshire
10	West Midlands in Europe (based in Brussels)	Head of Office, West Midlands in Europe
11	West Midlands in Europe (based in Brussels)	Policy Advisor (Research, Education and Training)

N.B. The titles and the names of the offices are as of the time of the interviews.

HERAs

	Institution	Title
1	Uni4ne	Manager
2	NWUA	Executive Director Research and Information Officer
3	Yorkshire Universities	Policy Officer
	WMHEA	Acting Regional Co-ordinator Director
4	EMUA	Head of Office
5	AUEE	Executive Director
6	HESE	Chief Executive
7	HERDA-SW	Head of Secretariat
	London	

Contact names have been removed from this web version

N.B. HESE, HERDA-SW were telephone interviews.

Yorkshire Universities replied by writing. Titles and names of the offices are as of the time of the interviews.

Others

	Institution	Title and Office
1	University of Newcastle	Pro-Vice-Chancellor
2	University of Newcastle, CURDS	Goldman Chair of Business Innovation, Business School; Centre for Urban and Regional Development Studies
3	ONE	Head of External Relations (Universities, Colleges, Learning and Skills)
4	ONE	Science and Industry Council Policy Manager
5	Uni4NE	Regional Project Manager, Widening Participation Project, Universities for the North East
6	University of Salford	Vice-Chancellor, University of Salford
7	Cardiff University	Director, Centre for Advanced Studies, Cardiff University
8	Universities UK	Policy Advisor
9	HEFCE	Higher Education Advisor
10	CMI-NCN	The Cambridge-MIT Institute
11	University of Cambridge	Corporate Liaison Office, University of Cambridge
12	SQW	Consultant

13	RMIT/ NIACE	Regional Partnership and Learning, Director, Higher Education
14	IAU	Research Director, International Association of Universities
15	IAU	Secretary-General, Executive Director, International Association of Universities
16	OECD	Administrator, LEED programme
17	OECD	Head of Programme, IMHE

Contact names have been removed from this web version

N.B. Titles and names of the offices are as of the time of the interviews. Some of the interviews with this group of interviewees include academic discussions on research methodology.

Appendix 2.2 Samples of Interview Question Sheets

Sample 1 University of Birmingham, senior administrator

Sample 2 HERA Secretariat, Template question sheets

Questions to Mr _____ _____ role _____, The University of Birmingham Meeting on Thursday, date, month, 2003 11.45-12.30

1. In what ways is the *University Plan 2002-07* a response to the government higher education policies?
2. What is the biggest challenge for the University in terms of corporate planning and implementation of the Plan? What are the administrative strategies? What is your role?
3. Are there any 'corporate models' for universities? Is the University going to be more centralised or be more 'networked' between Schools?
4. Is the University going to be more market oriented? Is there a tension between managers and academics in terms of the ideas of what the University is like? What is the role of senior managers in this light?
5. In what ways does the University create a corporate identity? How do you communicate it internally and externally?
6. With regard to the University's links with the region, what is the biggest challenge and what are the strategies? Is the University going to be more future-oriented, or more engaged with the regional agenda at present?
7. In what ways does the University try to influence public policy at regional level? Does the University try to join-up widening participation agenda, skills agenda, the areas of research expertise and regional development agenda?
8. What are the strategies of the University with regard to Outreach activities such as HEROBC, HEIF, SC/UC and HEACF? Outcome?
9. Is there any incentive/rewards mechanism for staff to work with third strand activities and/or work with the region? Is there a promotion mechanism for people who work as the interface with business, the community and the region?
10. Higher Education Institutions seem to be becoming more collaborative in terms of bidding for the European or government initiatives. Are there any strategies of the University in terms of such collaboration? More collaboration with regional HEIs? Is there a trend of further collaboration in the areas such as teaching and learning?
11. Did HEFCE's Restructuring and Collaborative Fund influence the University?
12. Does the University have the strategies to link international, European, national, regional and local aspects of activities? Is there a specific priority? Or does the university respond to opportunities more pragmatically?

Questions to Mr. /Ms. Title (Head of Secretariat/Chief Executive etc.) Name of HERA Date

Background

- 1) How was the Association established? Were there any pre-existing bodies such as Industrial Liaison Officers' or Business Development Officers', or Vocational Education Officers' meetings/networks?
- 2) How is it funded? How many staff do you have?
- 3) The structure of the Association: Strategy Board; Executive Committee; Special Interest Groups?
- 4) Main objectives and Mission statements

Regional Strategies

- 5) How has the relationship between the Association and RDA developing? Is the Association part of the regional strategies?
- 6) Has there been any changes in the way higher education sector works in the region in the last 3 years?
- 7) How do you evaluate university-business interaction promoted by initiatives such as HEROBC and HEIF? Regional indication? Do universities talk about collective measurement issues?
- 8) Is there a business outreach mechanism at regional level?
e.g. Knowledge House in the North East, CONTACT in the West Midlands.
- 9) Do you aim to create 'a brand image' of HEIs in your region or not? Do you leave it to individual institution rather than making a collective image/strategy?

Collaboration and Competition

- 10) In principle, does the Association represent the collective interests of all HEIs in the region? If not all of the institutions are collaborating in a particular programme, how do you work?
- 11) Do you think the history of collaboration among HEIs is strong or weak in your region? Any reasons for that?
- 12) What are the benefits for the universities of collaborating at regional level?
- 13) In which areas of activities do you find regional collaboration most effective?
And in which areas will it be *more* effective?
e.g.
 - Teaching
 - Research
 - Commercialisation of research e.g. spin-offs/IPR
 - Innovation, cluster development
 - Incubation/start-ups
 - Entrepreneurship education
 - European Funding e.g. ERDF, ESF
 - Student recruitment, Widening participation
 - Student Placements e.g. TCS, KITTS etc

- Graduate retention
 - employability
 - CPD
 - Lifelong learning, adult education
 - E-learning
 - Marketing
 - Regeneration
- 14) What are the difficulties of collaborating at regional level? Competition between HEIs?

Knowledge Economy, Regional labour market and skills issues

- 15) How is the skills situation in the region and how does the Association aim to work? Is graduate retention an agenda?
- 16) Is the Knowledge Economy agenda? What are the challenges and strategies?
- 17) Is there any exercise of Regional Observatory/Labour Intelligence System in the region?
- 18) How do P4P and FRESA work in relation to the Association?

Co-ordination

- 19) How do you co-ordinate sub-regional level and regional level?
- 20) Does the Association work with Science and Enterprise Challenge/University Challenge?
- 21) How do you co-ordinate innovation agenda and employability agenda in the region as HE Association? Do you collaborate with RDA and local authorities?
- 22) How do you avoid duplication of activities? e.g. similar business supporting services
- 23) Is regional networking in general developing in your region? Do HEIs have a strong voice in the regional networking processes? Do you make a collective effort to enhance the presence of HEIs in the regional networks? If so in what ways?

Inter-regional perspectives

- 24) Do you have inter-regional collaborative activities? If so, how did it start? e.g. MEDITI between HEIs in the West Midlands and the East Midlands
- 25) How do you compare different regional HE/Universities Associations? How do you exchange information about different approaches taken in different regions? What do you think the strengths and weaknesses of your own Association/Association's approach?

Future Perspectives

- 26) What is the biggest challenge for the HERA?
- 27) What do you think is the role of HE Associations in the near future, say, next 3 years?

Appendix 2.3 Conferences and seminars attended as part of research				
Date	Regional Conference (name of the region in bold)	Regional/European Conference	National Conference	International Conference
December 2000		<i>Regional Innovation Strategies</i> , Experts Meeting, Coventry TechnoCentre		
February 2001			Knowledge Economy & Cluster, University of Glasgow	
June 2001			Universities UK/HEFCE launch of <i>Regional Mission</i> publication London	
November 2001			Regional Studies Association Annual Conference <i>Regionalising Knowledge Economy</i> , London *	
December 2001			SRHE Annual conference <i>Excellence, Enterprise and Equity</i> in Cambridge*	
March 2002		Enterprise Seminar, Chamber of Commerce, Birmingham		<i>Rethinking Science Policy</i> , SPRU, Sussex University
May 2002			Royal Geographical Society conference on <i>English Devolution and RDAs</i> London	Regional Studies Association conference on <i>European Regional Policy and Evaluation</i> *
June 2002	WM Enterprise Fest held by Mercia Institute of Enterprise, University of Warwick	SAIL thematic meeting, Stratford Upon Avon	UK Regional Innovation Network (RINET) Meeting, Stratford Upon Avon	
September 2002				IMHE General Conference <i>Accountability and Incentive in HE</i> , Paris *
October 2002		<i>Regeneration through Innovation</i> Seminar, Smethwick		
November 2002	SW HERDA-SW Annual Conference, Torquay; WM MIE Enterprise Fest held at University of Birmingham Cluster Policies and Local Enterprise	SAIL meeting/ not attended	Regional Studies Association Annual conference on <i>Building Entrepreneurial Capacity in the Regions</i> , London*; Regional Studies Association student conference on <i>Geography of the New Economy</i> , London	<i>Triple Helix</i> Conference, Copenhagen Business School

December 2002				<i>University and the Knowledge Economy</i> , Innsburg
January, 2003			<i>Celebrating Achievement-Developing Potential</i> organised by University of Surrey and HEFCE. Guildford.	
February, 2003			HEPI lecture by Lord Dearing on the new White Paper.	
March, 2003			AURIL, University of Warwick	
April, 2003				Regional Studies Association <i>Reinventing Regions in the Global Economy</i> . Pisa *
May, 2003			“Science and the UK Regions: Towards the Regionalisation of Science Policy?” was held as part of ESRC Science in Society Programme by SURF, University of Salford, Manchester.	“Towards a multi-level science policy: regional science policy in a European context” organised by Regional Studies Association, London, Gray’s Inn.
June, 2003	East , Greater Cambridge Partnership Conference	Entrepreneurship Experts Meeting, Coventry TechnoCentre	Regional Studies with Cambridge-MIT (CMI) “Regional Competitiveness” Cambridge; HEF/HEPI on “Responsible University”, Oxford.	
August, 2003	WM HEIF II consultation organised by MIE with a Regional Consultant of HEFCE, at Warwick University			
October, 2003	WM WMHEA HEIF 2 Conference Aston University			

* The author gave papers with these events.

Appendix 3 Notes on Learning Regions, Cluster Development and Universities

1) Learning Regions and Universities

The concept of a 'learning region' has emerged in recent years as a "theory-led development model" (Hassink, 2001:223) which aims at achieving and /or supporting collective learning processes. The learning region describes those places that offer the 'right' institutional environment to encourage both private and social learning processes. The concept was coined by academic authors such as Richard Florida (1995) and Kevin Morgan (1997) in the field of innovation studies and economic geography, synthesising some ideas from evolutionary economics and theories on the role of spatial agglomeration (Lagendijk and Cornford, 2000:216). It is argued, "regions must adopt the principles of knowledge creation and continuous learning", whereby they must in effect become "learning regions"(Florida, 1995:532).

According to Florida, learning regions are "collectors and repositories of knowledge and ideas, and provide an underlying environment or infrastructure which facilitates the flow of knowledge, ideas and learning" (1995:528). In Florida's learning region perspective, all regions, he posits, must adopt the principles of learning in the provision of a series of inter-related infrastructures in production, human capital, physical and digital communications, alongside an effective system of industrial governance.

In the European context, the analysis of the learning region focuses more on the "contributions that social capital and trust make to supporting dense networks of inter-firm relationships and the processes of interactive learning" (Wolfe, 2001:8). For example, Asheim (1998:3 cited in Landabaso et al., 1999) defines a learning region as "representing the territorial and institutional embeddedness of learning organisations and interactive learning". In this light, the focus is on the extent and quality of the institutional infrastructure that constitutes a key element of the regional innovation systems discussed above. Indeed, these are seen as an attempt to constitute a *model* towards which actual regions need to progress in order to respond most effectively to the challenges posted by the ongoing transition to a learning economy (OECD, 2001a: 23; see also, Asheim, 1996: 391-4). It is characterised by regional institutions, which facilitate individual and organisational learning through the co-ordination of flexible networks of economic and political agents (OECD, 2001a: 24).

These concepts of learning regions quickly travelled from the domain of innovation policy to other policymaking domains, such as skill-oriented business support, lifelong learning, and then into the realm of higher education. The concept has had an appeal for

regional policy makers because it facilitates the broadening out of local technology policies to areas of business development and skills improvement (Lagendijk and Cornford, 2000: 216).

Universities have found particular interest in the concept of the learning region, particularly at a time when they are facing severe budgetary constraints from central government. Their home region can be a potential source of students and research income, and may provide some answers to the increased demands for the universities to be accountable for their social and economic contribution to society. Embedding in local partnerships and strategy-making also endows the universities with social legitimacy and support. Lagendijk and Cornford illustrate this with an example of a university that has embraced the learning region as institutional strategic discourse. In the opening speech of the academic year 1998-1999, the Vice Chancellor of the University of Maastricht used the concept of a learning region not only to promote the regional embedding of the university, but also explicitly as “a way to create more independence from the central state”, presenting the learning region as a key strategic response to the continuous budget cuts imposed upon universities (Lagendijk and Cornford, 2000:217).

In this light, it is important to note that to be part of the learning region is seen as the strategic positioning on the part of the university creating new opportunities and resources independent of the control of the national government. It is therefore not appropriate to presume that universities are integrated into the theoretical frameworks such as regional innovation systems or learning regions by default. What determines institutional behaviour most is the interests and strategies of each university based on its history, current resources and expertise, and future aspirations in relation to central government and other stakeholders in society, which may or may not be regional actors. In this light, regional institutions do matter, but analysing the role of local or regional institutions to the exclusion of all others does a disservice (Gertler, 1997:56). The region is *strategically selected* as an organisational field for the specific interests of the institutions. Universities can be regional institutions but sometimes they choose not to be for their strategic positioning in the multi scale organisational field.

The concept of the learning region may have been successful in mobilising specific actors such as universities, colleges and firms, forging policy networks and communication across various regional actors, including researchers, and allowing the promotion of their home regions as learning regions (Lagendijk and Cornford, 2000:216). However, even those regions which have explicitly adopted the learning region as a strategic policy objective have demonstrated “widely diverging trajectories of development” towards their goal (OECD, 2001a: 24). There are significant differences not only in the types of policies that they pursue but also in their existing social and economic circumstances. The latter is particularly

significant in terms of investigating the importance of *institutionalisation* processes at regional level.

2) Cluster development

Another influential theory-led development model is the cluster approach developed by American economists such as Porter (1998), Krugman (1991) and Enright (1995). They argue that internationally competitive industries are spatially concentrated in a few nations and regions. According to this theory, not only the kind of relationships is regarded as an explanation for industrial competitiveness but also the spatial clustering is the important explanatory factor. The cluster idea seems to have become a world-wide fad: from the OECD and the World Bank, to national governments, to regional development agencies, to local and city governments, policy makers at all levels have become eager to promote local business clusters (see Chapters 6 and 7). It has become “a sort of academic and policy fashion item” (Martin and Sunley, 2003:6).

Porter’s (1990) work on national competitiveness shows that the interplay between the “competitive diamond” of four sets of factors- firm strategy, structure and rivalry; factor input conditions; demand conditions; and related supporting industries - is fundamental to the competitiveness of firms, regions and nations. The cluster is seen as a geographically localised grouping of interlinked businesses and the competitive diamond is seen as the driving force for cluster development. Porter suggests that a nation’s most globally competitive industries are likely to be “geographically clustered” within that nation (Porter, 1990:120).

The enduring competitive advantages in a global economy are often heavily localised, arising from concentrations of highly specialised skills and knowledge, institutions, rivalry, related businesses, and sophisticated customers (Porter, 1998:90).

The standard rationale for cluster policies is that they can help promote the supply of those local and regional public goods which are absent due to public failure (OECD/IMHE, 1999). According to Martin and Sunley, there are four typical public goods promoted by cluster policies (2003:23-4). First, cluster policy emphasises the benefits of creating co-operative networks and encouraging dialogue between firms and other agencies. Some cluster policies start by appointing brokers and intermediaries to organise these dialogues so that a better co-ordination both between public and private agents and between different public agencies are encouraged (Lagendijk and Charles, 1999). Second, cluster policy often involves collective marketing of an industrial specialism raising the public relations profile of particular economies. Third, cluster policy provides local services for firms such as financial advice,

marketing and design service. It is recommended that local service provision is targeted on particular specialisms meeting specific local needs. Universities as technology support organisations may play an important role in this. Fourth, cluster policies identifies weaknesses in existing cluster value chains and attract investors and businesses to fill those gaps and strengthen demand and supply links (Brown, 2000).

However, the evidence of a positive association between clustering and innovation is not consistent (Martin and Sunley, 2003:22). Saxenian (1994:161) points out that

...spatial clustering alone does not create mutually beneficial interdependencies. An industrial system may be geographically agglomerated and yet have limited capacity for adaptation. This is overwhelmingly a function of organizational structure, not of technology or firm size.

Furthermore, many scholars stress that clustering or industrial agglomeration may also be responsible for the loss of national or regional competitive advantage (Grabher, 1993; Hassink, 2001:223). Cluster creation is a highly contingent process in which the various actors embedded within previous social relationships and institutions try to manipulate the environment for their benefit (Kenney and Von Burg, 2000:220).

The concept of a cluster has had major impact on policy-makers whilst most of the work by economic geographers have been largely ignored (Martin and Sunley, 2003:8-9). One of the reasons is that the focus of cluster theory is on the determinants of 'competitiveness' of firms, industries, nations and regions, which resonates closely with the growing emphasis given by politicians and policy-makers concerned with industrial competitiveness in today's global economy. The concept of a cluster has been a very influential policy tool in the organisational field of regional development (Lagendijk and Cornford, 2000: 214-5). It is true that there is little explicit empirical investigation of institutionalisation processes and the social and knowledge networks in Porter's works (Martin and Sunley, 2003:22).¹ However, the cluster as a concept has managed to mobilise social actors in the organisational field (Lagendijk and Cornford, 2000: 214-5). It is important to look at clusters not as "bundles of economic benefits" but as "regions of constructed benefits" (Kenney and Von Burg, 2000:220). The cluster policy initiatives seem to be relevant to supporting the new shape of industrial organisations in the knowledge-based economies (Hassink, 2001:223), and it *may* provide some empirical and theoretical basis for newly oriented regional innovation policies.

¹ The cluster concept may not be a useful analytical tool and it may be seen as "chaotic" (Martin and Sunley, 2003:10) and "vague, impressionistic neologisms" (Martin, 2001). Martin and Sunley (2003:22) argue that the social dimensions of cluster formation and cluster dynamics remain something of a "black box" in Porter's work.

The cluster concept and cluster policies need to be located as part of the wider dynamics and evolution of industry and innovation more generally (Martin and Sunley, 2003:17-8). The interactions of cluster policies and the institutional responses of universities is one of the institutionalisation processes that this thesis is interested to look at in one of the later chapters (see Chapter 7).

Appendix 5

Appendix 5.1 Maps showing Regional Boundaries of English Regions

The United Kingdom comprises Great Britain and Northern Ireland; Great Britain consists of England, Wales, and Scotland. The Isle of Man and the Channel Islands are not part of the United Kingdom. The Isle of Scilly are included as part of Cornwall throughout.

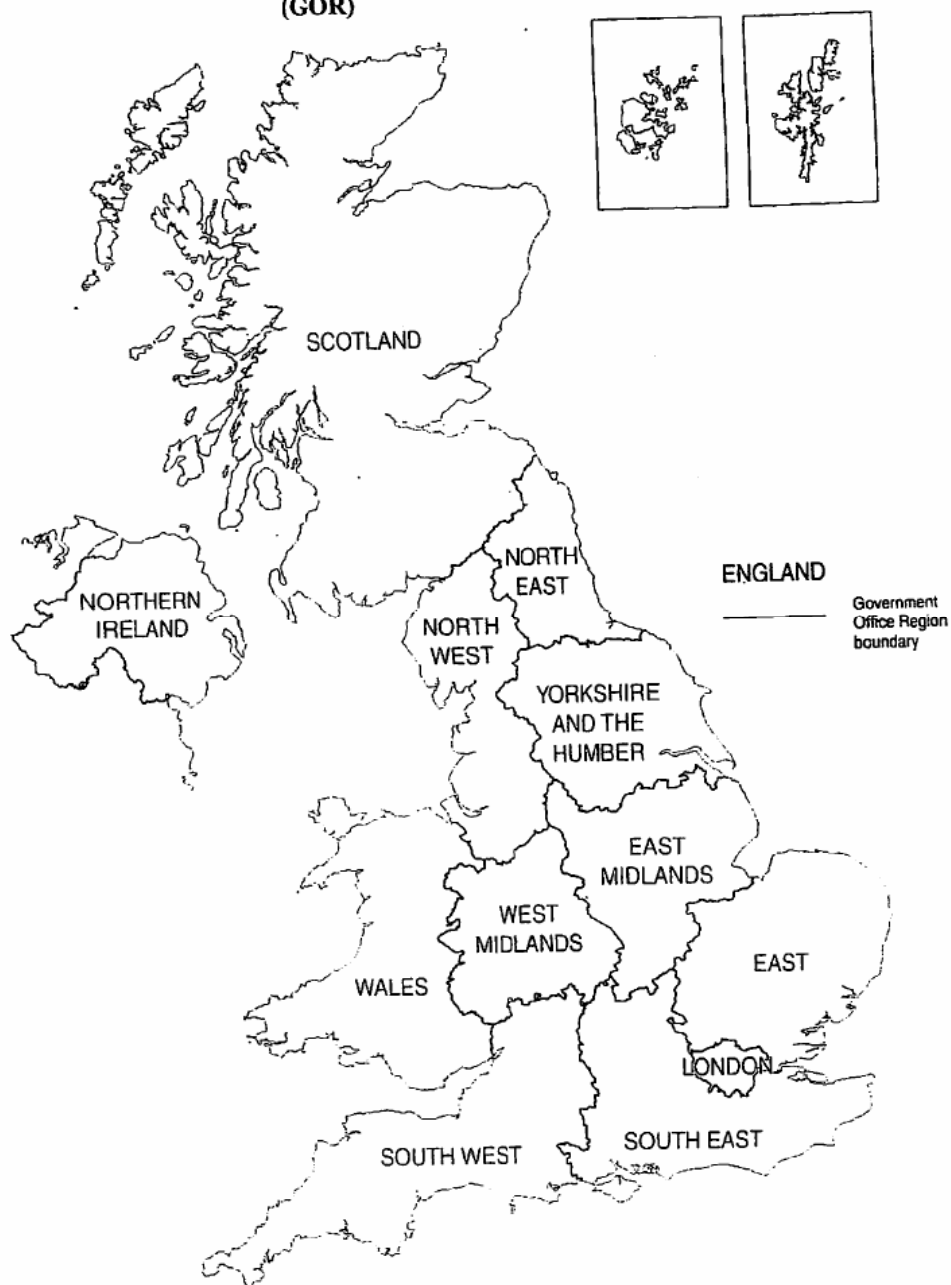
The statistical regions of the United Kingdom comprise the Government Office Regions (GORs) for England, Wales, Scotland and Northern Ireland. The Government Office for the North West merged with the Government Office for Merseyside in August 1998. The Government Office for the East of England is (formerly referred to as the Eastern Region) presented as East. (Map A).

Apart from the GORs, there are a number of other regional classifications. Prior to the introduction of the GORs, regional statistics were presented on the basis of the Standard Statistical Regions (SSRs) of the United Kingdom. (Map B). For other regional classifications, see Map C-I.

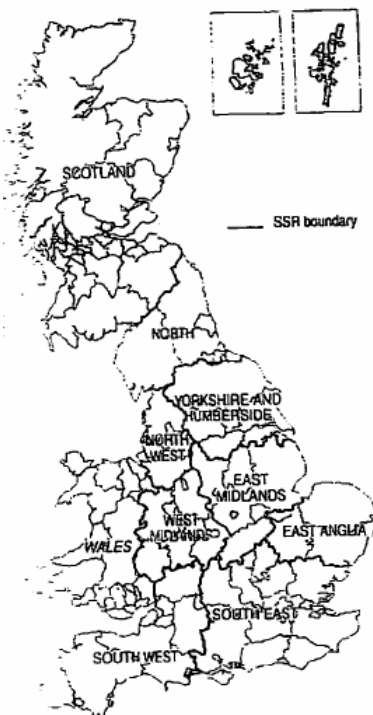
The diagram shows the difference between GORs and SSRs.

Map A

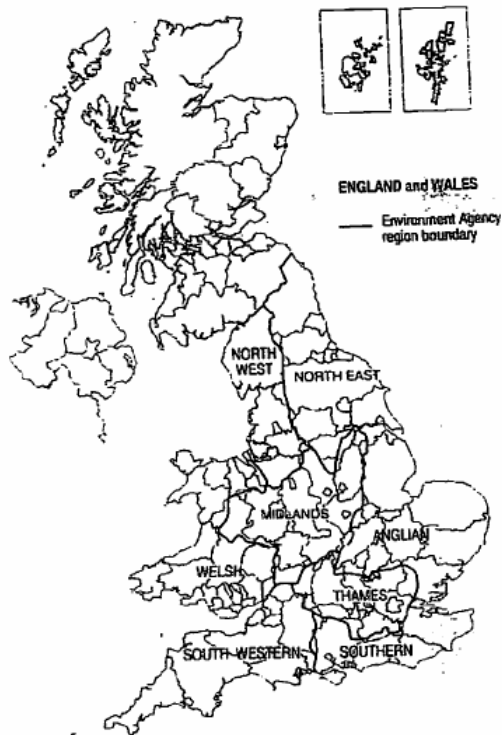
Statistical Regions of the United Kingdom
Government Office Region
(GOR)



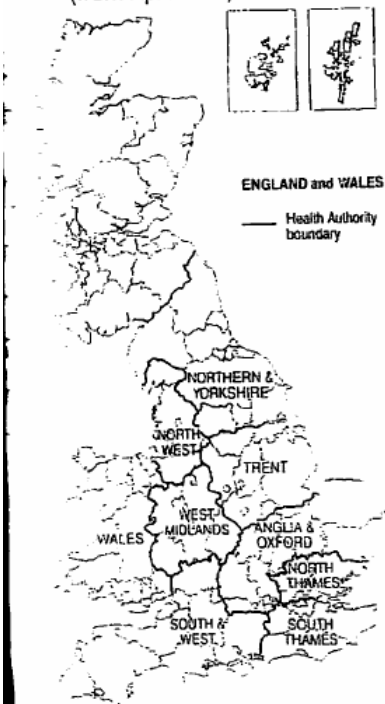
Standard Statistical Regions



Environment Agency regions

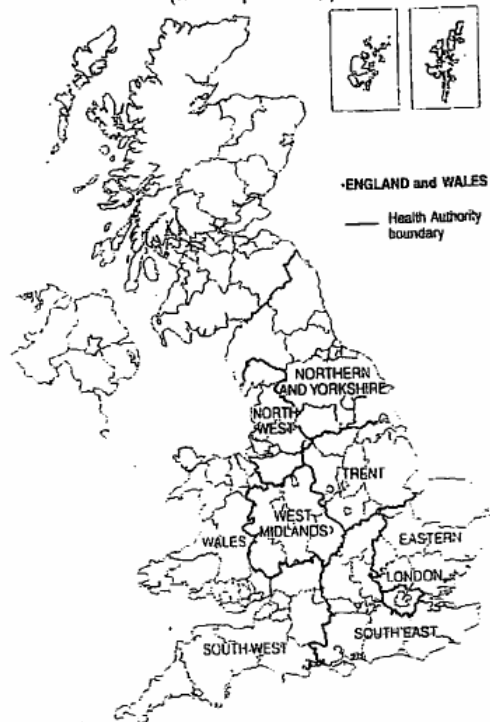


-S Regional Office areas (from April 1996)



Map C-J

NHS Regional Office areas (from April 1999)



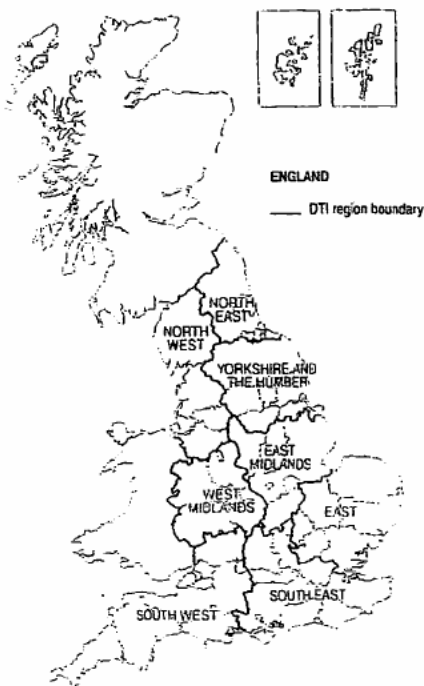
Police Force areas



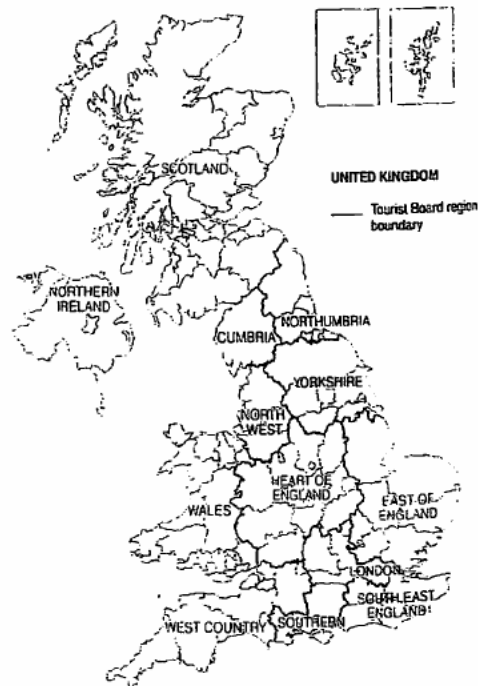
Prison Service regions



Department of Trade and Industry regions



Tourist Board regions



Standard Statistical Region (SSR)		Government Office Region (GOR)
NORTH	Cleveland# Durham# Northumberland Tyne and Wear	NORTH EAST
	Cumbria	
NORTH WEST	Cheshire# Greater Manchester Lancashire# Merseyside	NORTH WEST
YORKSHIRE AND HUMBERSIDE	Humberside# North Yorkshire# South Yorkshire West Yorkshire	YORKSHIRE AND THE HUMBER
EAST MIDLANDS	Derbyshire# Leicestershire# Lincolnshire Northamptonshire Nottinghamshire#	EAST MIDLANDS
WEST MIDLANDS	Hereford and Worcester# Shropshire# Staffordshire# Warwickshire West Midlands	WEST MIDLANDS
EAST ANGLIA	Cambridgeshire# Norfolk Suffolk	
	Bedfordshire# Essex# Hertfordshire	EAST
	Greater London	LONDON
SOUTH EAST	Berkshire# Buckinghamshire# East Sussex# Hampshire# Isle of Wight# Kent# Oxfordshire Surrey West Sussex	SOUTH EAST
SOUTH WEST	Avon# Cornwall Devon# Dorset# Gloucestershire Somerset Wiltshire#	SOUTH WEST

Counties prior to local government reorganisation.

Based on Regional Trends (1998 and 2000)

Appendix 5.2 Science Enterprise Centres and the Regions

The constitution of each SEC differs in the nine English regions.¹ The North East Region and the West Midlands Region made regional collaborative bids, and have all HEIs as members of their SECs.² East of England, South East and South West SECs are run by single institutions (University of Cambridge, University of Oxford and University of Bristol). In the East Midlands, the first round of SEC was single institutional bid (Nottingham), and then enlarged to other institutions in the region.

In Yorkshire and Humberside, the existing regional consortium, SEC was established based on an existing White Rose Consortium (three research-led universities in the Region, see p. 287).³ In 1999, Professor Sir Gareth Roberts, the then Vice-Chancellor of the University of Sheffield, greeted the announcement as a positive endorsement of the White Rose Partnership:

The motto of the Government Competitiveness White Paper, published last December, was 'collaborate to compete'. Our Consortium does just that. I am confident that this collaboration will make a substantial difference to the regional economy and to the three universities involved.

The North East Centre for Scientific Enterprise (NECSE) entails collaboration between Durham and Newcastle Universities with some involvement from the other three universities in the region, namely, Teesside, Sunderland and Northumbria.⁴ In the North

¹ In Scotland, the Scottish Parliament, Ministers, Scottish Enterprise and the Higher Education Institutions are all committed to increasing productivity, competitiveness and entrepreneurship in Scotland. The Scottish Institute for Enterprise (SIE) is a new partnership between industry and the universities which aims to turn this commitment into practical action. The Institute's approach is consistent with the requirements of *A Smart, Successful Scotland* and builds on the partnership which has been developing between CMI, other SECs through NCN and other international networks.

² In the West Midlands Region, some higher education colleges are associate member of MIE, the regional SEC. See Chapter 7.

³ <http://www.whiterose.ac.uk/AboutWhiteRose.cfm> access date 22/07/03

Performance Indicator	White Rose	Oxford	Cambridge
Staff (RAE 2001)	2467	1906	1728
Total Income (£m)	602	408	397
Research Income (£m)	211	206	192
Postgrad Research Students (FTE)	3530	3065	3780
Industry, Commerce and Public Corporations Research Income (RA4 1995 – 2000 £m)	68	53	51
Engineering and Technology Research Income (RA4 1995 – 2000 £m)	93	28	45

⁴ The Centre is administered from the University of Durham. The NECSE, as part of its successful bid for Science Enterprise Challenge funds, was awarded funds to be made available for science and engineering curriculum development. The Curriculum Development Fund monies have been allocated

West, Manchester Science Enterprise Centre is a partnership between UMIST and the University of Manchester in collaboration with Manchester Metropolitan University and the University of Salford (UMIST Ventures and Campus Ventures are supporting organisations). The Centre has also received further funding to expand and incorporate the University of Liverpool into the initiative.

In the East Midlands, UNIEI (University of Nottingham Institute of Enterprise and Innovation) builds on the strong foundations established by the University of Nottingham and a successful enterprise in Higher Education initiative in the late 1980s. A bid led by UNIEI has now brought £2m to the region to set up an East Midlands Science Enterprise Network (EMSEN), which brings together all the region's higher education institutions. The network aims to promote enterprise skills development and commercialisation of research in the HE sector, establishing research projects and teaching programmes for students and regional businesses. UNIEI has extensive international links with Europe, the mid-west USA and the Far East.⁵

In the West Midlands, the Mercia Institute of Enterprise (MIE) was launched by Lord Sainsbury in January 2001. The Institute is the focus for the largest collaboration among the Science Enterprise Centres in England. Warwick and Birmingham University are the lead partners, with membership of the Universities of Wolverhampton, Staffordshire, Coventry, Aston, Keele, Central England in Birmingham, and the Open University and others. Advantage West Midlands, the Regional Development Agency for the West Midlands, strongly supports the creation and development of the Institute, which forms a key element in the Region's Innovation Strategy. The Board of Management was chaired by the CEO of Advantage West Midlands (see Chapter 6 for the detail).

In London, there are three SECs. The Centre for Scientific Enterprise is a joint venture between University College London and London Business School, drawing upon their unique and complementary skills and resources to develop an entrepreneurial spirit for the exploitation of science and technology. The Entrepreneurship Centre at the Imperial College of Science, Technology and Medicine was launched in January 2001. Finally, SIMFONEC (Science Ideas to Market, Focused on Enterprise and Commercialisation) was formed in the second round of government funding, in 2001. It incorporates four London

to each university for projects that will meet the aims and objectives of the NECSE, i.e. all projects had to demonstrate that the funding will enable and enhance enterprise and entrepreneurial activities within their subject discipline.

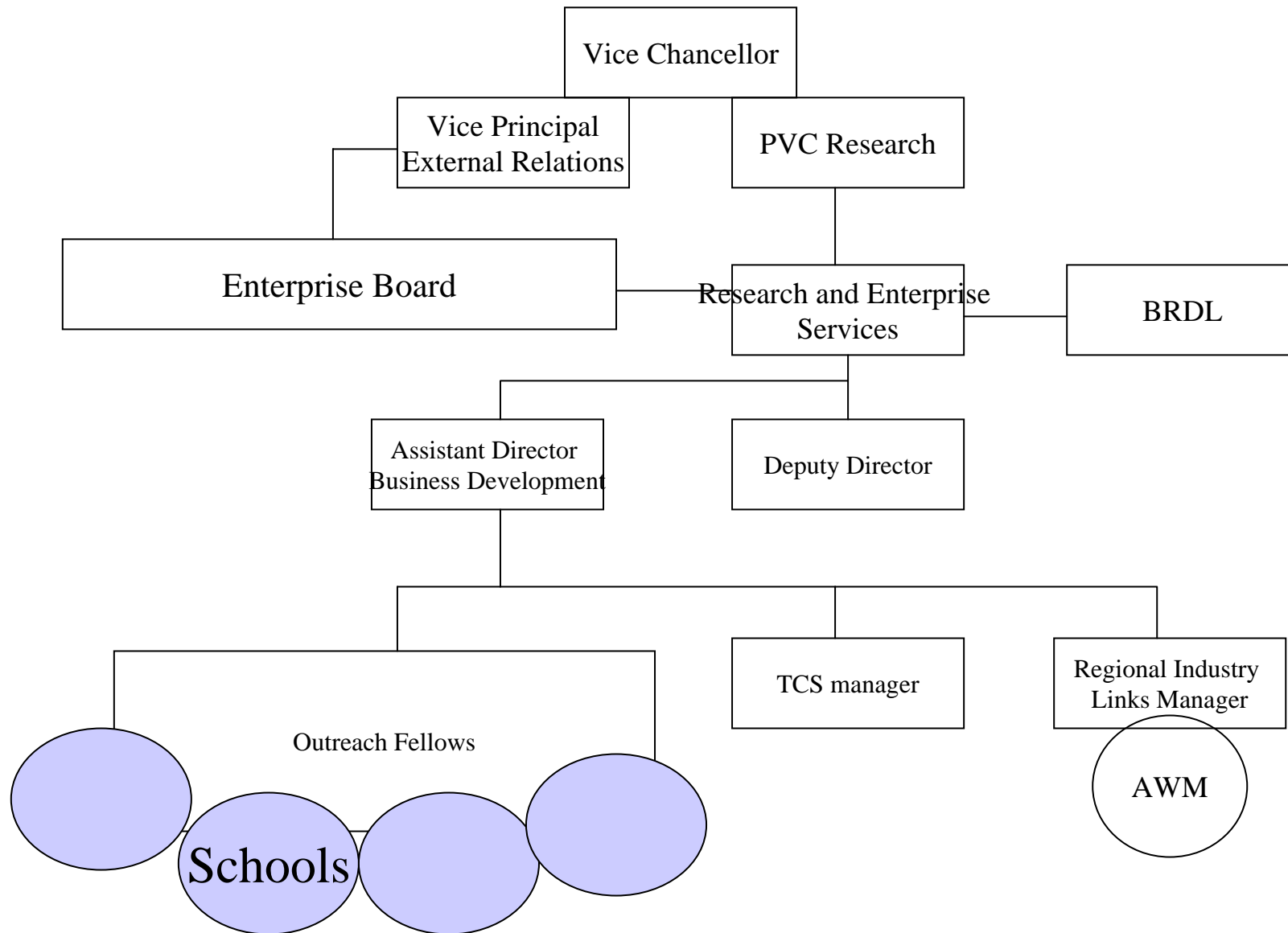
⁵ For example, the Zernike Group in Holland specialise in science park management and venture capital funding; the University of Michigan, USA bring a partnership with Ford focusing on advanced manufacturing engineering and technology transfer; and research and teaching into entrepreneurship work is developing through the newly opened campus in Malaysia and the Universitas 21 network.

institutions: City University; Queen Mary College, University of London; King's College London and the Royal Veterinary College.

As already mentioned, in East of England, South East and South West Regions, SECs are run by single institutions (University of Cambridge, University of Oxford and University of Bristol). In the South West Region, Bristol Enterprise Centre (BEC) is part of Bristol University's Research and Enterprise Development and, initially, a single institution SEC. Its mission is to "to create a vibrant, entrepreneurial culture at the University of Bristol, which encourages the establishment and growth of technology-based business". However, BEC have now joined forces with the Universities of Bath and Southampton under the Wessex Enterprise Centre (WEC). WEC has access to a combined research portfolio of over £550 million. Together they work to exploit that intellectual capital and ensure greatly increased returns to the Universities and the regional and national economies.

The Cambridge Entrepreneurship Centre (CEC) has been established at University of Cambridge to train, develop and support the people who will make new knowledge-based ventures successful. The Centre operates throughout the University of Cambridge and in partnership with the local business community. It has also formed strategic partnerships with MIT's Entrepreneurship Centre and CERAM the business school for Sophia Antipolis in France. In the South East, Oxford Science Enterprise Centre is based at Oxford's Said Business School and focuses on business and entrepreneurial skills training, primarily for the science-based departments. In these cases, there is less emphasis on the contribution to the region.

Appendix 6 Organisational Chart of Outreach Activities of the University of Birmingham



Appendix 7

Appendix 7.1. Geography and Making of the West Midlands Regional Economy

The West Midlands Region centres on the West Midlands conurbation, an informal term for Birmingham, the Black Country, and Solihull, which dominates the Region accommodating nearly half the region's population. The Region encompasses the surrounding shire counties of Warwickshire, Staffordshire, Shropshire, Herefordshire and Worcestershire. These are mainly rural areas with both older country and new, expanding towns, many of which have gained rapid growth in population and industry from the dispersion from the metropolitan area. The West Midlands metropolitan county area is largely urbanised and industrialised, situated about 110 miles (180 kilometres) north-west of London.¹ The total population of the metropolitan area is 2,551,700, making it the second largest urban area by population in Britain after London.²

From the late eighteen century onwards, the West Midlands regional economy was founded upon its basic industries, such as coal, iron and steel production, and especially metal working. When these industries declined in the late nineteenth century, they were replaced by growing engineering industries such as cycles, motor vehicles, machine tools, and aircraft which adapted the old-established metal working skills. But there have long been diverse non-metal businesses in cocoa and chocolate, tyres, carpets, glass and others. The experience of the West Midlands except in the Black Country in the inter war period contrasted sharply with that of other industrial regions.³ Unemployment rates were generally lower than in most parts of Britain, and the region's recovery from depression was more rapid. The dynamism of the West Midlands economy continued into the post-war period, when the region reinforced its position as Britain's leading manufacturing centre.

After the Second World War, the West Midlands vehicle, aircraft and engineering sectors were boosted by exports to European markets starved by the wartime destruction of their domestic productive capacity. During the 1950s, as European producers recovered, the

¹ The West Midlands County, containing the metropolitan district council areas of Birmingham, Solihull, Dudley, Sandwell, Wolverhampton, Walsall, and Coventry, was created in 1974 and abolished in April 1986. Before the creation of West Midlands County Council in 1974, the West Midlands conurbation covered the following areas: the county boroughs of Birmingham, Solihull, Warley, West Bromwich, Wolverhampton, Walsall, and Dudley; the municipal boroughs of Halesowen, Stourbridge, and Sutton Coldfield; and the urban district of Aldridge-Brownhills (Spencer, et al., 1986).

² Apart from Birmingham, the other two large urban centres in the old metro County area are Coventry and Wolverhampton, each with a population of around 250,000. All of these areas are largely urbanised and industrialised. The other major conurbation in the Region is on the northern edge around Stoke-on-Trent and Newcastle with a population of some 300,000 where the principal industry is still ceramics (pottery) with steel and mining in the past.

³ Beesley (1955, 1957) studied the inter-war West Midlands' car industries that provide some of the most penetrating insights into 'cluster dynamics' of the Region (Taylor, 2003).

market shifted in response to the expansion of British home demand. Protected from structural unemployment, West Midlands workers enjoyed high wages and high activity rates, leading to family income levels second only to those in the South East (Marshall and Mawson, 1987:96-7). Manufacturing provided 1.2 million jobs, 56.6 per cent of total regional employment at the start of the 1960s compared with 38.4 per cent in Great Britain as a whole (Smith and Collinge, 2000:111).⁴

However, it was during the late 1960s that the prosperity and resilience of the West Midlands economy began to flag as its industries, representative of British industry at large, continued to fail to match the levels of investment and productivity achieved by its chief international competitors in Europe, the US, Japan and other Far East countries during a period of intense international competition. Thus West Midlands manufacturing entered the 1970s in a poor position to withstand the economic shocks that characterised that decade. Changes within key sectors and companies in the Region are seen to have played a significant role. The car industry had been the largest single employer and sustained substantial proportions of West Midlands employment in the metal-based and engineering sectors. The Region's reliance on manufacturing industry, particularly on car production, left it exposed with ending of tariff protection, to growing foreign competition and the weakness of its service sector at a time when this was generally expanding.⁵

From the mid 1960s, economic indicators such as employment and investment shifted from a positive to a negative trend. GDP per head in the region, so heavily dependent on manufacturing performance, has been consistently low by comparison with many other parts of the country. In 1965 the Region enjoyed a GDP per head over 8 percent above the national average, second only to the South East. By 1981, this had fallen to almost 10 percent below the UK average (Marshall and Mawson, 1987:99). The transition from a traditional to an advanced industrial economy proved difficult, and during the 1970s and 1980s the region suffered rapid employment loss, particularly in the areas most dependent on manufacturing, which are the conurbation and the medium size towns (Spencer et al. 1986 cited in Ayres et al 2002:64). Successive recessions, intensified competition, and lack of investment in plant, innovation and skills had together brought about the imminent collapse of its industrial base.

⁴ Coal mining still provided 55,000 jobs and metal manufacturing including automotive 40.5 percent of regional employment compared with 19.5 per cent for Great Britain, with 100,000 more jobs than all services added together (Smith and Collinge, 2000:111). The loss of manufacturing jobs has far outweighed the impact on production and GDP with a major factor in this being job cuts accompanying the introduction of new technology.

⁵ The concentration on metal-related manufacturing stems partly from its very success in the 1950s and early 1960s, and from failure of the regional economy to develop or attract new industries not least because its success had generated relatively high labour costs while the industrial development certificate control prevented the building of new or extensions in industrial floor space and regional policy aimed to force firms to move out to areas of higher unemployment.

Unemployment rose steadily from the mid-1960s to 3.0 per cent in 1971 and 5.9 per cent in 1976. In particular, the years 1981 to 1983 saw unemployment in the region reach 15.3 per cent, involving 354,000 people which were concentrated in particular localised urban areas (Smith and Collinge, 2000:112). Nevertheless, as elsewhere, in the UK, the total number of people in employment has continued to grow, even if many now worked in far less well-paid jobs relative to the past.

Changes since then have been noted. Although per capita GDP in 1998 was still only 92 per cent of the UK average, the West Midlands' relative economic performance improved throughout the 1990s. The regional industrial structure has shifted from manufacturing towards service activities such as business and finance, hotels and catering and other services such as leisure, logistics and retailing though often these have been dependent on manufacturing. As Dahlstrom puts it, the restructuring of the West Midlands from the 1960s till today can be illustrated by the shift in the industrial structure from "a total dominance of manufacturing to one where the service sector is by far the largest" (Dahlstrom, 1999:6).⁶ Furthermore, the UK has been currently experiencing a manufacturing recession brought on by the pound's over-valuation in relation to the Euro and, until recently, by high interest rates and weak consumer confidence. The growth of certain service industries has been the vital engine of locally-based economic growth.

The Tables below on relative annual GDP growth rates reflect recent manufacturing and service sectors and their restructuring in the Region.

Table 6.A. Recent and forecast annual GDP growth rates*

⁶ It is argued that many of the new service jobs are likely to be in the public sector and in public-sector supported services such as health, education and training (Bryson et.al., 1996:164).

Total GDP	1997	1998	1999	2000	2001
West Midlands	3.6	1.7	1.7	2.8	2.5
UK	3.4	2.5	1.8	3.2	2.7
Manufacturing GDP	1997	1998	1999	2000	2001
West Midlands	0.7	-1.9	-0.9	3.6	2.6
UK	1.0	0.1	-0.5	3.7	2.6
Service GDP	1997	1998	1999	2000	2001
West Midlands			3.1	3.5	3.0
UK			2.6	3.8	3.2

(*per cent per annum growth based on Cambridge Econometrics' forecast made in December 1999, from Smith and Collinge, 2000:114, 117)

Table 6.B Total estimated average annual GDP growth

Total GDP	1995-2000	2000-2005
West Midlands	2.3	2.6
UK	2.7	2.6

(*per cent per annum growth based on Cambridge Econometrics' forecast made in December 1999, from Smith and Collinge, 2000:118)

GDP growth and positive change reflect successful capital investment in buildings, plant, design and often innovation. However, as Smith and Collinge point out, under-investment has long been recognised as a problem over many decades in Britain and specifically in the West Midlands and Birmingham.

Indigenous investment in the Region has been boosted by inward investment and, until 2003, the West Midlands has topped the list of regions for foreign direct investment in the UK (Smith and Collinge, 2000:120). It is worth mentioning one of the new towns in the West Midlands Region in terms of its relationship with direct foreign investment and its institutional networking. Telford has become a dynamic centre for inward investment which has now brought in some 140 overseas companies from 18 countries employing 16,000 people. The highest numbers of foreign-owned companies are from the US (36). Telford also boasts the largest number of Japanese manufacturing companies in one town in the UK. The reason for this high level of Japanese investment is that in the early 1980's, many Japanese companies were seeking manufacturing bases in Europe to enable them to maximise

opportunities offered by the European market.⁷ However, North American and Japanese manufacturing companies are now being attracted by the lower-cost environment offered in East European countries such as the Czech Republic and Hungary, and it is from this quarter that competition for investment and for automotive components is expected to come. This is the problem the Region is facing with the ongoing trend of globalisation of the economy and increasing global outsourcing.⁸

It is common to find newer kinds of foreign inward investment taking the form of 'mergers and acquisitions' and strategic alliances. Now overseas companies own the main car producers in the Region. Jaguar in Coventry and Land Rover in Solihull are owned by Ford (US), Peugeot in Coventry is owned by PSA Peugeot Citroen (France) (Tilson, 1998 cited in Dahlstrom, 1999:7). Rover until 1995 included Jaguar, Land Rover and LDV plus Rover in Longbridge, Birmingham. It was publicly owned after going bankrupt from 1977 until sold to BMW (Germany) in 1995, when the die was already cast by wider changes taking place in the industry. The events that took place in the auto industry in the West Midlands during March to May 2000 can be described as "historical disturbances" (Bentley, 2000, 125). BMW announced its intention to sell off Rover, in the first instance to Alchemy Partners, a venture capital company. The Rover plant at Longbridge was eventually sold for £10 (sic) to Phoenix Consortium, headed by a former chief executive of Rover. Land Rover was sold to Ford for £1.8 billion (for the detail, see Bentley, 2000:141-6). LDV, which makes small vans, remains independent, surviving an abortive partnership with Daewoo, the Korean firm.

The largest urban centre in the Region, the City of Birmingham,⁹ lies in the middle of the metropolitan area of the West Midlands. Birmingham's traditional specialities are the manufacture of motor vehicles and the processing of non-ferrous metals; it is also known for production of railway carriages, jewellery and small metal products and, in the past, small arms, and, outside the metal sector, chocolate, tyres and until recently beer. The development of the City of Birmingham and its rise to a position of first provincial British town occurred

⁷ Telford is a new town, one of 25 new towns built by the Government over the past 50 years. As one of the main growth centres in the West Midlands region the population has grown steadily from 74,000 in 1968 to 123,000 in 1996. The population is forecast to grow to 136,000 by 2006. The Telford Development Agency provides supports to both UK and overseas companies in the initial stage of investment, advice on training, recruitment and retention of staff, and 'Aftercare Service'. An Inward Investment Partnership (IIP) provides services to new companies moving into Telford and works as a liaison with local/government authorities, higher education, and professional services.

⁸ Regional development literature has in general been fairly pessimistic about the likelihood of supplier spillovers from foreign investment. One reason for this is that foreign subsidiaries tend to purchase fairly low proportions of their inputs from host regions, especially when compared with domestic firms (Collis and Roberts, 1992; Potter et al., 2003:43).

⁹ The City of Birmingham has a population of 961,041 (census 1991). It is governed by Birmingham City Council, which had a budget of around £1 billion for 1998, employing a total of 453,251 people in 1997. It is the largest local authority in Great Britain, including London, as London is at the moment divided into numerous local authorities.

rapidly during the 19th century and are closely linked to its industrial development. Unlike other great Victorian cities, such as Liverpool and Manchester, Birmingham did not suffer much industrial decline in the 1930s. It was not until the 1970s and especially the early 1980s that de-industrialisation hit the city seriously. Between 1980 and 1991, the city of Birmingham lost 40 per cent of its manufacturing jobs (*The Economist* 1998).¹⁰ Following the collapse of the city's manufacturing industry, the City Council has been trying to diversify the industrial base by developing new, high value, high growth activities.

Metropolitan, Unitary and District Local Authorities

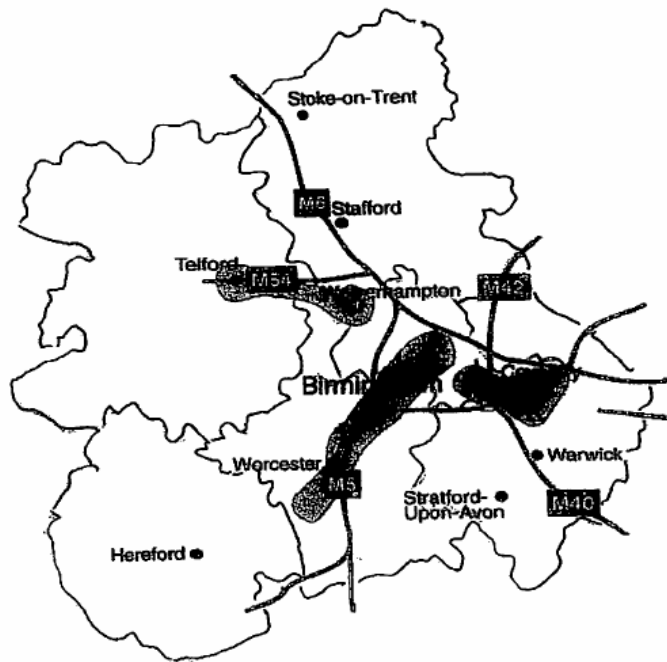


¹⁰ Birmingham and its surrounding region lost 300,000 jobs between 1979 and 1992, which disguises the disappearance of 430,000 jobs in manufacturing alone because of the creation of employment in the service sector (Bryson et.al 1996:164). By 1982, the unemployment rate in Birmingham had risen more than 20 per cent with its inner areas worst affected (Loftman and Nevin, 1996:187).

Index 7.2 Map of High Technology Corridors in the West Midlands on

High Technology Corridors

Used to diversify the region's economy by attracting high technology, high value added businesses through the presence of research institutions, universities and property opportunities



Priority development areas for the Corridors

- A38 Birmingham to Malvern
 - Nanotechnology
 - Medical Sciences
 - Commercialisation from QinetiQ
 - Photonics
- Wolverhampton-Telford
 - ICT/e-learning
 - Polymers
 - Advanced engineering
- Coventry, Solihull, Warwick
 - ICT
 - Transport Design
 - Grow-on space for high tech companies

(from AWM, 2003b)

Appendix 7.3 Interview with ‘outreach’ units of Universities and HEIs in the Region

- Business Partnership Unit at Aston University [quotations based on notes from interview January 2002]
- Research and Enterprise Services at the University of Birmingham [quotations based on notes from interviews in November 2002; December 2002]
- The Corporate Development Centre at the University of Central England in Birmingham [quotations based on notes from interview 7 March 2001].
- Business Partnership Unit, Commercial Affairs Department at Coventry University [quotations based on notes from interview March 2001]
- The Business Development Office at Keele University¹ [quotations based on notes from interviews at Research and Business Development Office, November 2001; Business Development Office, July, 2002]
- The Regional Office/Research and Commercial Development at Staffordshire University [quotations based on notes from interviews on December 2001 and September 2002]
- The Regional Office/Services to Business at Wolverhampton University [quotations based on notes from interview June 2001].
- The Research and Development Services Office/Research Support Services at Warwick University [quotations based on notes from interviews at July 2001; January 2002].
- Learning Business Centre, Newman College of Higher Education [based on notes from interview in February 2002].
- Harper Adams University College [based on notes from interview in September 2002].

Business Partnership Unit at Aston University [quotations based on notes from interview January 2002] Aston University is a “highly focused, niche market institution”, very focused with industry and commerce.

It is not new for us to have industrial links, and many of the staff have been working with industry for years and years and have naturally integrated the links into their activities.

The cultural change started 20 years ago. Before that there had been an extremely high wall around the university.

We didn’t have good interaction with industry especially in terms of commercialisation of research. Between 1981-96, a Vice Chancellor, a British man who spent 20 years at Stanford University, changed Aston completely. He tried to restructure inside the university through quality of teaching and research. Now we are much better placed as to commercialisation. For 15 years, restructuring happened,

¹ Business Development Office is part of the Office of Research & Enterprise (ORE), which was created in 2002. As part of the University Secretary's Office, ORE brings together the combined knowledge and expertise of individuals in the areas of Research, Knowledge Transfer and Innovation to support, assist and develop new opportunities for staff, students, business and the community. <http://www.keele.ac.uk/research/> access date 03/08/03.

period of change and new development. It took a long time. Cultural change was everywhere, which takes almost one generation.

What is new to the University is the commercialisation of research such as applying for patents, developing licensing and starting companies. The new challenge for the University is to “get everyone on side in terms of staff internally to achieve the commercialisation goal”. The current Vice Chancellor used to be a chief executive of a public company. He brought in a new financial director. They were much more supportive of commercial activities at the University. At the same time, the government put emphasis on commercialisation through HEROBC, HIEF, and other various schemes to encourage universities to commercialise. “Both things came together and have made big changes”.

Without HEROBC funding, the Business Partnership Unit would not exist.² Aston received £1.1. million from HEROBCI and also received £489,000 from HEIF single institution bidding and the team is rapidly expanding. The University is part of nationally funded regional collaborative programmes such as CONTACT, Mercia Spinner and MEDICI, which all promote industry links and commercialisation of research.

The University as a whole is pushing third leg activities which are now promoted by the government. Incentives are provided at all levels which include financial incentives under IPR policy for patents and licensing, and ‘research credibility’ from industry related development,³ and, within departments, they work on “load models” whereby staff get points for the work they do.

The Head of the Business Partnership Unit perceives the growing financial opportunities made by AWM, and to have close links with AWM is seen as very important:

More and more is happening regionally because a lot more money is being cycled through AWM; that money is to be used within the region not outside the region; that is interesting.

Aston has a quality rating of 5 for all its departments and is known as a nationally and internationally renowned institute. It benefits the Region greatly because:

We are bringing the best possible world class research activities for the benefit of businesses in the region. To create the mechanism to bring in the expertise is exactly what this unit is all about.

² BPU has been fast developing: at the time of the interview there were 5 staff growing to 9.

³ TCS counts as research credibility which forms part of RAE. The terms of condition of Aston University’s staff is to spend 50 days a year outside the university.

One of the difficulties of working within the Region is to work with SMEs because of the time and money available for SMEs.

We are not as focused on SMEs as many universities claim to be. ...We are trying to use the scarce resource of the university in as a profitable way as possible, and SMEs often cannot afford it.

However, as the European fund has a SME focus, BPU works closely with SMEs through European programmes. They link closely with West Midlands Innovation Network (WMIN) which is the main interface with SMEs. Aston's BPU has a consultant who works full time with that Unit looking at SME opportunities for universities.

Aston Science Park is run on a purely commercial bases by a private company which has access to capital funding, links with City, the Government Office, and AWM. The BPU is located between the University and the Science Park working as a facilitator between the two. The commercial links that the Science Park have help the University to commercialise its research activities. Aston has extremely good links with the City of Birmingham. The University work with the City in a number of ways, including with regard to the adjacent Eastside development, in close collaboration with Birmingham City Council, Economic Development Department. The University is heavily involved in Alliance for Knowledge Advancement (AKA), along with other higher education institutions along the A38 Corridor in the sub region.

Research and Enterprise Services at the University of Birmingham [quotations based on notes from interviews in November 2002; December 2002] The Office of Research and Enterprise Services,⁴ working with Birmingham Research Development Limited (BRDL)- the University's private commercial exploitation company-⁵ is responsible for promoting the links with the local community and has an extensive network of business interactions such as

⁴ The Office of Research Support was established on 1 January 1989. In 1996, the title was modified to Office of Research Support and Business Development (RSBD), in order to reflect a more active role and give greater emphasis to identifying and developing business opportunities for the University in research, training and the provision of related services. Research and Enterprise Services is the core service supporting the University of Birmingham in meeting two aspects of its Mission, to "maintain the international reputation for the highest quality of scholarship and research..." and to "serve Birmingham and the West Midlands region using our skills and knowledge and drawing on our international reputation to promote social and cultural well-being and to aid economic growth and regeneration."

⁵ In terms of exploitation of Intellectual Property, the University's own technology exploitation company, Birmingham Research and Development Ltd (BRDL), is in charge of a portfolio of over 100 patents, a team of three licensing executives and a yearly product development fund of £600K. The Licensing Team at BRDL is responsible for maximising the commercial potential of the University's intellectual property (IP) through a combination of licensing and spinning out of new companies thus both protecting and exploiting the University's intellectual property base.
<http://www.industry.bham.ac.uk/enterprise.htm> access date 18/08/03

licensing of new technology, research collaborations, vocational and personal development, training short courses.

The office of Research and Enterprise Services manages the Business and Industry Team as part of the HEROBC programme. The programme concentrates on business development in the form of consultancy, industrial research contracts and collaboration, CPD programmes and commercialisation. Since its beginning in 2000, the main work of the Business and Industry Outreach Programme is being delivered through the Business and Industry Outreach Fellows appointed in several Schools.

“The purpose of the Business and Industry Outreach initiative is to encourage businesses and industry to access and use the university’s research and development resources, and to help our own academics understand the benefits and potential pitfalls of working with business and industry. It is essential that we build stronger bridges between industry and academia and the appointed Fellows will really make a difference.” [Assistant Director (Business Development)]⁶

Outreach fellows serve as the interface between the University and industry, the region, and as the interface between the Schools and the University’s central body, which is Research and Enterprise Services. (See Chapter 7).

The Corporate Development Centre at the University of Central England in Birmingham [quotations based on notes from interview 7 March 2001]. In 1995, the CDC was came into its current form.⁷ Eleven of its staff are fully funded by the University. A further nine full- and part-time posts are externally funded.⁸ Earlier, university-Industry linkage existed mainly through European funding⁹ but it was un-coordinated. HEROBC started in January 2000 and the HEROBC funded Outreach team came into its current form of a full team in April 2000.¹⁰ So the purpose of the Outreach team was to bring co-ordination

⁶ The office changed name from RSBD (Research Support and Business Development) to Research and Enterprise Services in 2002. The quotation is from

<http://www.industry.bham.ac.uk/outreachteam.htm> access date 10/09/03

⁷ The Enterprise Unit pre-dated the current CDC formed in 1985.

⁸ University of Central England, Corporate Development Centre “Corporate Development Centre, Past, Present and Future” 25 May 2000.

⁹ Income from Industry link: £7.5 million turnover in 1999 (cited in bid for HEROBC). From European fund. Plus TEC, City Council fund.

¹⁰ Outreach Team ---Outreach Project Manager: (f/t)-----Assistant
Outreach Project Staff Development Co-ordinator
4 Outreach agents (2/2.5 days p/w)
Automotive and Engineering: Technology Innovation Centre
Business and Finance Development: Business School, Built Environment
Creative Industries: Institute of Art and Design, Conservatoire
ICT Computing

and collaboration into the University's industry linked activities. It works as a co-ordination and the customer focused point. Because of the decentralised nature of the University, previously it was difficult for a company to get access to the University, especially when the nature of work involves different areas of expertise such as engineering and business. The role of the Outreach team is to co-ordinate these activities, and Outreach agents have been appointed in the four sectors which were chosen based on the West Midlands *Regional Economic Strategy* (AWM, 1999).

It is not possible for the Outreach team of four to cover everything. So they have formed a "focus group" in each faculty which brings people together who have got links with industry or networks group of lecturers involved in student placements.

Outreach team is A Contact point, not *THE* contact point. University has been already doing business in many fields. Existing links go on as they are. The focus is more on internal links: identifying staff needs and building up capacity internally. It aims at facilitating cultural change in the University. Helping people to go out to companies.

Outside the university, the Outreach team is linking up with agencies and organisations such as AWM, WM Arts, Royal Society of Arts and so forth. Links with companies are through the agencies because linking with companies takes time and cannot be covered by sending out direct mails.

Business Partnership Unit, Commercial Affairs Department at Coventry University [quotations based on notes from interview March 2001] Coventry University sees itself as a regional player, and the significance of wealth creation at regional level is very much recognised. Coventry University was not successful in its bid for HEROBC first round. With the money from HEROBC II, the Business Partnership Unit was created within the Commercial Affairs Development in December 2000. The Unit aims to enhance University's interactions with business and the wider community.¹¹

BPU aims to co-ordinate activities within the University, and between universities and with the University and business to create a culture of change. At Coventry, these activities used to be done separately by academics at departmental level.

Now BPU is collecting information from each school and mapping business needs. Except for the engineering department, which has its own business development officer, the business linkage is developed through individual academics. BPU tries to make these links more formal. Business Service Officers can be seconded from departments and the role of Business Service Officers is to identify new opportunities. There is a need for more staff in the BPU; and there is a need for improving links with University staff and external staff.

¹¹ It has 6 staff, a project manager, information officer, and 3 business service officers.

Schools prefer to have each money and activities, they don't want to share information. Sharing information concerning the partnership with business is sometimes difficult.

Internal cultural change to work with industry as a university rather than departmental or individual level has just started with HEROBC money.

Coventry University Enterprise Ltd (CUE) is the trading arm of Coventry University Higher Education Corporation and offers a range of services to companies of all sizes, research organisations, higher education, and public bodies, with particular specialisms in innovation support and European partnerships. Coventry University Enterprise is part of the Europe-wide Innovation Relay Centre network,¹² supported by the European Commission to broker technology transfer agreements between UK and overseas companies. The secretariat of the SAIL programme which promotes university-industry links across European regions is based at CUE (see Chapter 7, p.245). Another link with Europe is the EPI Centre, which operates to promote European awareness, policy and funding opportunities to both the public and private sectors. Through the Managing Director of CUE, the University has a strong link with *Regional Innovation Strategy*. Both CUE and Innovation Relay Centre were part of MONTAGE, a partnership between regional universities to work with SMEs in the Region, funded by the ERDF. MONTAGE was completed 31 December 2001.

The University is part of Coventry and is a very important player in the sub-region. The Vice Chancellor sits on the board of Warwick Solihull Partnership (CWS Partnership), and the University, particularly through its Centre for Local Economic Development (CLED),¹³ contributes to the Coventry Community Plan by setting up the mechanism for deciding the plan for the delivery priorities for Coventry Economic Development. The University manages a number of ERDF and ESF funded projects.

¹² The Midlands Innovation Relay Centre is the local node within a network of 68 regionally based centres covering the entire European Union and much of Central/Eastern Europe. The Innovation Relay Centre network is the official EC innovation and technology transfer support service, providing companies with access to European partners for technical cooperation, research, licensing, manufacturing and joint venture agreements. The Midlands IRC is the regional support centre for Coventry and Warwickshire, Derbyshire, Herefordshire, Leicestershire, Lincolnshire, Northamptonshire, Nottinghamshire, Rutland, Shropshire, Staffordshire, the West Midlands and Worcestershire.

¹³ [based on interview with a researcher at CLED, February 2002] "We are represented in local committees, local partnership meetings. I am also involved in Coventry Clothing Partnership through my work with the clothing industry funded by ERDF and ESF". Coventry Clothing Industry is represented by a small cluster of 60 companies heavily with Asian backgrounds. They are facing global competition in very labour intensive industry. I try to help them become more competitive".

The Business Development Office at Keele University¹⁴ [quotations based on notes from interviews at Research and Business Development Office, November 2001; Business Development Office, July, 2002] The University has always played a role as a research-based organisation, but ‘exploitation’ of the research and development of research results into product is a new phenomenon. Universities are moving towards this direction, and there are negative responses from academics.

Keele University hardly marketed itself to business at all. All the applications came from the individual links of academics. The University never tried to get work with industry. HEROBC funding gave the opportunity to that situation. It is to try to develop the skills not only internally but to work with those outside the University.

HEROBC money was used on two aspects.

- a) Business development side—Business development and marketing including TCS, strengthened applied research; looking for new clients trying to economic realisation, centrally located but work across faculties
- b) Learning activities — student focused activities such as work related learning, student placement, employability skills incorporated into degrees.

Keele has been a research-intensive university and, as such, research has been considered as a “general good”.

The previous Vice-Chancellor saw commercialisation such as contract and consultancy as a way of making money to do research—“quick and dirty way to get money” to get the essential thing to go on. HEROBC message has changed this view. Outreach is seen as good for its own sake.

The role of Business Development Manager is to encourage academics who haven’t worked with industry to develop links. *Keele in Business* is a new brand name for these business development activities.

It is not as difficult to have new clients outside as to persuade academics on campus. ...Academics are overstretched. All universities have to consider what can be the incentives for academics.

The difficulty of encouraging outreach at the University level was pointed out:

¹⁴ Business Development Office is part of the Office of Research & Enterprise (ORE), which was created in 2002. As part of the University Secretary's Office, ORE brings together the combined knowledge and expertise of individuals in the areas of Research, Knowledge Transfer and Innovation to support, assist and develop new opportunities for staff, students, business and the community. <http://www.keele.ac.uk/research/> access date 03/08/03.

Ideally, partnership between individual academics, departments and industry should be constructed. The department must benefit from commercial activity as a collective body rather than as individuals.

The University has played a significant role in the sub-region of North Staffordshire and has had a strong link with the local authority.

The borough of Newcastle is a relatively small market town. In the town, the University is the largest employer. Lots of University staff live in the borough. The University is in a unique position: there are very close links with the University and the local council. Chief executives meet each other, lots of interconnections. This is more than normal with universities. For the local authority, in a small borough council, having a good university is very positive.

The development of the science park has been supported, encouraged by the local council. With regard to the links between the University science park and the companies located within the park, university-industry links and collaboration do not occur although, generally, “the university is seen as good thing, the park a good place to locate”.

North Staffordshire has lost two main economic drivers: local mining and the pottery industry. Both Staffordshire and Keele Universities play big parts in regeneration policies: retaining graduates, training skills, attracting inward investment and starting up of high-tech companies.

There are big roles for the universities, which is much more highlighted than it used to be. The University has new roles as mediators and facilitators in partnerships and collaborative relationships. When different bodies work together there are tension between the organisations. University can be part of the glue.

Collaborative working relationships have been built up with some intermediary organisations such as Manufacturing Advisory Services, and the HEROBC II-funded collaborative mechanism, CONTACT, through a Field Officer for the Staffordshire and Shropshire area.

I am busy with internal marketing. There is not time to get out to talk to industry except on one or two occasions organised by chambers of commerce or other bodies. The CONTACT field officer makes a difference by ‘opportunity generating’ in the region.

An operational link is being established with Business Links, as well as having a high level link with local authorities. Efforts are made to identify general themes in the area.

Although the university is situated in the West Midlands Region, business links and partnerships are strong outside the Region such as in Manchester and North Wales and Lancashire. Many students also come from these areas. From a research funding perspective,

region is another tune added to the already existing national and European tunes, which is “in disharmony”.

There is a very little (research activity) on regional side. If the University was situated more central in the West Midlands, there could have been more to offer to traditional industry in the Region.

Reflecting this geographical dimension, the attitude of the University seems to be more flexible about the RDA regional boundary than other universities in the Region are.

It is important for the universities to make the right partners, rather than restricting itself within the ‘region’ as such.

At a sub-regional level, Keele works very closely with Staffordshire University, and they are complementary to each other. The relationships between Keele and Staffordshire used to be more competitive but are getting more collaborative these days. Whilst Staffordshire takes in local students, Keele recruits more widely. In relation to Staffordshire University, Keele sees its function as to bring external skills into the area.

The Regional Office/Research and Commercial Development at Staffordshire University [quotations based on notes from interviews on December 2001 and September 2002] The origin of the University was as a training college and it has never lost that vocational orientation: the employability agenda is very important. It has always been on the leading edge of what is happening in industry, keep updating and working with practice. The needs of local employers are always considered, and IT training and manager training have been provided. The University has long relationships with big companies in the area and has provided management training to big corporations such as Wedgwood. In the case of small companies, it is more difficult because they cannot afford to pay for training. Under European funding (ERDF Objective 2 &3) small business training has been conducted. The University has worked closely with the Single Regeneration Budget funds. For Staffordshire University, the third leg activity and engagement with a local agenda is at the core of the University activity, right from the Vice-Chancellor down, “we are not just paying lip service to this”.

The Regional Office was renamed from Commercial Development Unit several years ago to reflect the increasing consciousness of the University as a key thing in the Region both outside and inside. The idea was “by working partnership, to deliver what the customer wants” in the Region. In 2002, the office again changed its name from Regional office to Research and Commercial Development, recognising the link between the research and

commercial activities, the necessity of new knowledge, new services, working regionally, nationally and internationally.¹⁵

Staffordshire University was successful in receiving the maximum amount from HEROBC gaining over £1 million. Out of the 3 years plan, overall there are 20 to 30 different strands of activities which have impact on the University such as student placements including TCS, short courses, consultancy, training, and networking with partners.¹⁶ Another example is the opportunity to become a patron of the Chamber of Commerce, which enables them to attend meetings, and access information to meet their regional agenda. A new research centre to pioneer work in economic and social regeneration has been launched at the University with HEROBC money.

There is a general trend among academics to work more closely with industry. However, there are issues surrounding resources, time, money, rewards, training in terms of how the academic community works. We visit companies before academics can get in.

Internally, the University is creating various mechanisms to promote commercial activities.

Internally we have an enterprise reps network. We would access wider expertise initially to the enterprise reps; it's a better way than going through Deans. We are launching an expertise gateway. There is an opportunity within academic and other communities as well, who want to get involved in industry, to register interest, when they would be available to do this.

In terms of commercial activities, the University has a strong local focus although this is not exclusive.

We focus on companies locally. We are not an international brand like Warwick and Aston are, we haven't got resources to do that. But we do work internationally. We have good relationships. If we look at commercial work, we very much focus locally. We can tap into local resources such as the regeneration agenda, AWM, local companies. We have very close relationships with the Technology Park. Teaching, we need to look at international recruitment. Research, we need to recognise our international profile.

As to contact with local firms, they work closely with Business Links and other intermediary organisations. The University works very closely with CONTACT sub-regional field officer.

¹⁵ Around the same time, Keele University was also reorganising the Office and Business Development Office which was incorporated as part of the Office of Research & Enterprise.

¹⁶ In the first stage, the funds enabled the University to create a 'first stop shop' in the Regional Office to improve the customer service and to provide an easy way to contact the university for companies and partners looking for support.

“We see CONTACT as our extended sales force” which adds an extra resource to the University.

Staffordshire University along with Keele University are engaged in the sub-regional regeneration agenda. The University has lots of links with AWM, and Keele and Staffordshire put joint bids for the sub-regional agendas, but there is a difficulty in collaborating with other HEIs regionally through WMHEA as each sub-region has its own issues and strategies.

The Regional Office/Services to Business at Wolverhampton University [quotations based on notes from interview June 2001]. Being a “First Class Regional University” is the strategy of Wolverhampton University.

The University of Wolverhampton aims to be a first class regional university making a major contribution to the social and economic regeneration of the West Midlands (Vice-Chancellor 2001).

The University has a long history of providing support to small and medium-sized businesses (SMEs) throughout the West Midlands and in working closely with organisations responsible for social and economic regeneration. The geographical characteristic influences the way the University operates. The University has geographical advantage as Wolverhampton is the only university to cover the Black Country and Shropshire where there are many SMEs. The Birmingham area is more competitive with 5 higher education players.¹⁷

On behalf of the University, Services to Business, as part of the Department for Innovation and External Funding¹⁸ is responsible for generating long term relationships with businesses and communities in the region and promoting the University's expertise and facilities.

HEROBC I started April 2000, but really got started in December 2000. There are three enterprise development manager posts funded by HEROBC at Wolverhampton. The areas were decided according to regional needs identified by the RIS and was decided by the market niche for the University. One is for tourism and leisure in the Schools of Sports Performing Arts and Leisure and the Business School; designing and technology in the Schools of Engineering, Built Environment, Arts and Design; and health and the environment in the Schools for Applied Sciences, Nursery and Midwifery, and Health Studies.

The Competitiveness Centre located in the University's Telford Campus, aims to bring together the knowledge-based expertise within the University of Wolverhampton for the

¹⁷ In Birmingham, there are three universities (Aston, UCE, Birmingham), one university college (Newman) and one higher education college (Food and Tourism).

¹⁸ It changed the name from Customer Services in Regional Office to Services to Business in the Department for Innovation and External Funding in 2002.

benefit particularly of small to medium-sized enterprises in the West Midlands, but also businesses throughout the UK. The Regional Research Institute was established to provide client focused research and consultancy to meet the needs of local, regional and national communities and organisations - both from the statutory and the voluntary & community sectors. Links between the University and the Science Park are not so strong. Not only technology, knowledge transfer, but business start-ups and exploitation of intellectual properties have not been so strong at Wolverhampton. Wolverhampton is located at the heart of AWM's Technology Corridor and these are the areas of potential development of the University in terms of its strong profile as a regional university, and recent collaborative mechanisms developing in the region.

The Research and Development Services Office/Research Support Services at Warwick University [quotations based on notes from interviews at July 2001; January 2002]. The University of Warwick has been contributing to the Region through drawing in students and enhancing the skills of the Region, hence benefits economic well-being of the Region.¹⁹ The University is represented in a various bodies in the Region such as:

- Economic development Unit
- CBI
- Coventry-Warwickshire-Solihull Partnership
- RDA management board
- RIS board operational committee
- Local chambers of commerce
- Business Links
- LSC.

Research and Development Services Office was developed as a single outward facing unit which aimed at trying to understand what is happening throughout the University, mapping activities and finding complementary and overlapping areas. The Business and Regional Support Unit (BRSU) covered regional links and TCS working as a catalyst, formalising the linkages with the Region through various departments that included continuing education through Warwick Manufacturing Group (WMG) and Warwick Business School.

Warwick has been involved in the links with industry since it was created in 1965. It went as far as a book called *Warwick PLC* was published in 1970 criticising the

¹⁹ University has always been very firmly embedded in the Region, particularly with Coventry and Warwickshire business interests (the University was created due to the pressure from trade unions, politicians and companies in 1965).

University's too close relationship with local industry. So this is not a new thing for the university. However, it is important to bear in mind that relationship with industry is only part of the picture of the university's whole activities. Third leg activities are all an integral part of the University, and have to be incorporated with the core activities of the University, ie. research and teaching. To go beyond this makes the University's strategy difficult. 3rd leg has to be part of the whole strategy.

HEROBC I started in early 2000, and the HEROBAC programme was used to "institutionalise" Warwick's relationship with the Region. BRSU has been the catalyst and HEROBC project has given very much focus within the Business and Regional Support Unit. The role of BRSU has been as "a facilitator as well as creator of new links".

Depth and breadth of participation has increased because of the (HEROBC) initiatives with people and resources.

WMG is important for links with industry through student placements such as TCS and technology transfer in general. With support from Europe, there are initiatives of the University such as Innovation Direct, operating primarily through Warwick Manufacturing Group, which help companies looking for industrial manufacturing solution.

Warwick Ventures which was established as part of the University in 2000 looks at the commercialisation of research such as managing intellectual property issues, licensing or creating a university company. Through Warwick Ventures, business development managers are based in departments to look for business opportunities.

We have a global coverage of the University keeping our eyes open for business opportunities.

Business development managers are recruited from outside the university with intellectual property experience and that of developing businesses. Warwick Ventures has deliberately been made part of the University because it is important to be seen as part of the University.²⁰

Two of the most tangible examples of the University's contribution to the local community are the University Science Park and the Warwick Art Centre. Warwick University has a strong link with the Warwick Science Park.²¹

²⁰ Prior to 2000, number of starting up company was one, but now it has increased to six [interview, Director of Warwick Ventures, June 2003].

²¹ By 1981 unemployment rate in Coventry rose to 17.5% and the City Council opened a dialogue with Warwick University to establish whether the University could offer any support. The most tangible result was the proposal to create a science park with the explicit aim of attracting new industry and new technological skills into Coventry (Shattock, 1999:124). In 1984, the University of Warwick Science Park was opened on a site adjacent to the University, a joint venture between the University and the local authorities of Coventry City, Warwickshire and West Midlands Enterprise. This has developed to

The University is part of the Coventry, Warwickshire, Solihull partnership along with University of Coventry and has been actively engaged with sub-regional activities including local partnerships for ERDF and ESF projects and Regeneration Zones.

Partnerships are working better at sub-regional level where local players are very well networked, and most people trust each other. It's been a slow process taking 3-4 years but now it works. You tend to work together and has knock on the effect of that.

The relationship between Warwick and Coventry University is characterised by the combination of competition and collaboration.

Competition: both have good engineering and business schools. Collaboration between engineering is extremely good and, at office level, there are trust and reciprocity.

There is collaboration at a regional level, too. For example, as mentioned already, the 'ceramics challenge for the 21st century' was an initiative involving Staffordshire Training and Enterprise Council (TEC; then), local universities (Staffordshire and Keele) and the ceramics trade associations. University of Warwick, which is not in the sub-region, provided R&D capabilities for new companies in the area. This can be seen as an example of new partnerships and network emerging at regional level between universities which may lead to regional innovation systems.

Learning Business Centre, Newman College of Higher Education [based on notes from interview in February 2002]. Newman College was founded by the Catholic Education Council in 1968 designed for teacher training. It has good links with small businesses through its IT department. In the first round of HEROBC, Newman made a collaborative bid with Westhill College. There were two main areas relevant to HEROBC initiatives:

- English as a Second Language
- IT for community of ethnic groups

12 months later, all institutions were encouraged to bid again. All institutions were told that they wouldn't get single bid. But as Newman bid collaboratively for the first round, they could bid as a single institution as well as collaboratively as a regional bid (CONTACT). For the second round, the full amount received as a single institution was £285,000, and the funding lasts until July 2004. Under HEROBC I (with Westhill College), Learning Business Centre was set up. Under HEROBC II (a single institution bid), 3 posts were established for the Centre. The main remit of the Centre is to offer IT training to business and to run programmes on English for business purposes targeting mostly for those who use English as a

become one of the UK's most successful Science Parks with satellites in Coventry and Warwick and managed space in Solihull.

second language. Under HEROBC I funding, the Centre implements a government initiative scheme, University for Industry (UfI) - Learning Direct Centre.²²

Harper Adams University College [based on notes from interview in September 2002]. Founded in 1901, Harper Adams University College is the UK's largest center for higher education for food, agriculture and rural business sector. The College's core subject areas include agriculture, engineering, surveying, agrifood marketing, countryside management and generic business studies (Universities UK/HEFCE, 2001b: 15). For many years Harper Adams has maintained a number of specialist Centres which have worked with business and community client groups. The HEROBC funding allowed additional projects from the Centres and initiated new areas of activities. It is particularly aimed at active promotion of business start-ups and support for micro and SME businesses. Under HEIF, Harper Adams made a single institution bid, targeted at groups in the rural economy and across the rural/urban divide. The focus is initially on the West Midlands Region, and the bid aligned with AWM's RES. One of the projects, "Women in Rural Enterprise (WIRE)", aims to expand a network model to achieve business start ups and to improve business survival and growth rates among rural women entrepreneurs.

²² It provides internationally accredited on-line courses.

Appendix 8

Appendix 8.1. Chronological sequences of events in the North East and Yorkshire and the Humber

Box 8.1 North East HE Collaborative mechanisms

1983 Higher Education Support for Industry (HESFI)

1995 Knowledge House - ERDF, HEROBC

1999 Universities for North East (Uni4ne)

2001 North East Centre for Scientific Enterprise (NECSE) -SEC

NorthStar -RDA

2002 Knowledge North East -HEIF

Box 8.2 Yorkshire and Humberside HE Collaborative mechanisms

1989 The Regional Research Observatory –ad hoc partnership-

1993 Yorkshire and Humberside Universities (phase 1)

1997 White Rose Consortium –ad hoc partnership-

1997 White Rose Faraday Partnership

1998 YHUA set up a joint venture company

1999 White Rose Centre for Enterprise –SEC

2000 YHUA became a formal regional HE association including HE colleges

2002 Centres of Industrial Collaboration (CIC) -RDA

Appendix 8.2.Comparing HERA Secretariat

	Start	Number of HEIs inc. OU	Standard subscription fees exc.OU p.a.£ (approx.)	Location	Number of staff (FTE)	Title of the Head of the Office
Uni4ne	1983- HESIN 1999- Uni4ne	6	6K	RTC North Ltd, technology transfer company	Secretariat 3 plus Project staff 14	Manager
Yorkshire Universities	1993-	13	10K	Within HEI	4.5 core staff and 5 project staff	Chief Executive Officer
NWUA	1999	16	10K	Near RDA	Secretariat 5 plus project staff 7	Chief Executive
EMUA	Nov. 1999	10	7.5K for 7 full members; the rest pay less	Within HEI	Secretariat 1.5 and 1 funded by RDA	Head of secretariat
WMHEA	Sep. 1999	13	Uni 5K HE 3K	Within HEI	Secretariat 2 plus 8 CIMs funded by RDA	Director
AUEE	Oct. 2000	11	Full member 5K Other 2.5K	Same as RDA	Secretariat 2	Executive Director
LHEC	1999	40	na	Same as London First	na	na
HESE	1999	25	Proportional to FTE student totals	Near RDA	Secretariat 6	Chief Executive
HERDA- SW	Aug.1999	14	Flat fee 5,050	Same as RDA	Secretariat 2 funded by core funding 2 funded by RDA and other grants	Head of Secretariat

The information is as of February 2003; number of staff often changes and, due to the various sources of funding, the information presented in this table is not very accurate.

Questions to Mr. /Ms. Title (Head of Secretariat/Chief Executive etc.) Name of HERA Date

Background

- 1) How was the Association established? Were there any pre-existing bodies such as Industrial Liaison Officers' or Business Development Officers', or Vocational Education Officers' meetings/networks?
- 2) How is it funded? How many staff do you have?
- 3) The structure of the Association: Strategy Board; Executive Committee; Special Interest Groups?
- 4) Main objectives and Mission statements

Regional Strategies

- 5) How has the relationship between the Association and RDA developing? Is the Association part of the regional strategies?
- 6) Has there been any changes in the way higher education sector works in the region in the last 3 years?
- 7) How do you evaluate university-business interaction promoted by initiatives such as HEROBC and HEIF? Regional indication? Do universities talk about collective measurement issues?
- 8) Is there a business outreach mechanism at regional level?
e.g. Knowledge House in the North East, CONTACT in the West Midlands.
- 9) Do you aim to create 'a brand image' of HEIs in your region or not? Do you leave it to individual institution rather than making a collective image/strategy?

Collaboration and Competition

- 10) In principle, does the Association represent the collective interests of all HEIs in the region? If not all of the institutions are collaborating in a particular programme, how do you work?
- 11) Do you think the history of collaboration among HEIs is strong or weak in your region? Any reasons for that?
- 12) What are the benefits for the universities of collaborating at regional level?
- 13) In which areas of activities do you find regional collaboration most effective?
And in which areas will it be *more* effective?
e.g.
 - Teaching
 - Research
 - Commercialisation of research e.g. spin-offs/IPR
 - Innovation, cluster development
 - Incubation/start-ups
 - Entrepreneurship education
 - European Funding e.g. ERDF, ESF
 - Student recruitment, Widening participation
 - Student Placements e.g. TCS, KITTS etc

- Graduate retention
 - employability
 - CPD
 - Lifelong learning, adult education
 - E-learning
 - Marketing
 - Regeneration
- 14) What are the difficulties of collaborating at regional level? Competition between HEIs?

Knowledge Economy, Regional labour market and skills issues

- 15) How is the skills situation in the region and how does the Association aim to work? Is graduate retention an agenda?
- 16) Is the Knowledge Economy agenda? What are the challenges and strategies?
- 17) Is there any exercise of Regional Observatory/Labour Intelligence System in the region?
- 18) How do P4P and FRESA work in relation to the Association?

Co-ordination

- 19) How do you co-ordinate sub-regional level and regional level?
- 20) Does the Association work with Science and Enterprise Challenge/University Challenge?
- 21) How do you co-ordinate innovation agenda and employability agenda in the region as HE Association? Do you collaborate with RDA and local authorities?
- 22) How do you avoid duplication of activities? e.g. similar business supporting services
- 23) Is regional networking in general developing in your region? Do HEIs have a strong voice in the regional networking processes? Do you make a collective effort to enhance the presence of HEIs in the regional networks? If so in what ways?

Inter-regional perspectives

- 24) Do you have inter-regional collaborative activities? If so, how did it start? e.g. MEDITI between HEIs in the West Midlands and the East Midlands
- 25) How do you compare different regional HE/Universities Associations? How do you exchange information about different approaches taken in different regions? What do you think the strengths and weaknesses of your own Association/Association's approach?

Future Perspectives

- 26) What is the biggest challenge for the HERA?
- 27) What do you think is the role of HE Associations in the near future, say, next 3 years?

Appendix 2.3 Conferences and seminars attended as part of research				
Date	Regional Conference (name of the region in bold)	Regional/European Conference	National Conference	International Conference
December 2000		<i>Regional Innovation Strategies</i> , Experts Meeting, Coventry TechnoCentre		
February 2001			Knowledge Economy & Cluster, University of Glasgow	
June 2001			Universities UK/HEFCE launch of <i>Regional Mission</i> publication London	
November 2001			Regional Studies Association Annual Conference <i>Regionalising Knowledge Economy</i> , London *	
December 2001			SRHE Annual conference <i>Excellence, Enterprise and Equity</i> in Cambridge*	
March 2002		Enterprise Seminar, Chamber of Commerce, Birmingham		<i>Rethinking Science Policy</i> , SPRU, Sussex University
May 2002			Royal Geographical Society conference on <i>English Devolution and RDAs</i> London	Regional Studies Association conference on <i>European Regional Policy and Evaluation</i> *
June 2002	WM Enterprise Fest held by Mercia Institute of Enterprise, University of Warwick	SAIL thematic meeting, Stratford Upon Avon	UK Regional Innovation Network (RINET) Meeting, Stratford Upon Avon	
September 2002				IMHE General Conference <i>Accountability and Incentive in HE</i> , Paris *
October 2002		<i>Regeneration through Innovation</i> Seminar, Smethwick		
November 2002	SW HERDA-SW Annual Conference, Torquay; WM MIE Enterprise Fest held at University of Birmingham Cluster Policies and Local Enterprise	SAIL meeting/ not attended	Regional Studies Association Annual conference on <i>Building Entrepreneurial Capacity in the Regions</i> , London*; Regional Studies Association student conference on <i>Geography of the New Economy</i> , London	<i>Triple Helix</i> Conference, Copenhagen Business School

December 2002				<i>University and the Knowledge Economy</i> , Innsburg
January, 2003			<i>Celebrating Achievement-Developing Potential</i> organised by University of Surrey and HEFCE. Guildford.	
February, 2003			HEPI lecture by Lord Dearing on the new White Paper.	
March, 2003			AURIL, University of Warwick	
April, 2003				Regional Studies Association <i>Reinventing Regions in the Global Economy</i> . Pisa *
May, 2003			“Science and the UK Regions: Towards the Regionalisation of Science Policy?” was held as part of ESRC Science in Society Programme by SURF, University of Salford, Manchester.	“Towards a multi-level science policy: regional science policy in a European context” organised by Regional Studies Association, London, Gray’s Inn.
June, 2003	East , Greater Cambridge Partnership Conference	Entrepreneurship Experts Meeting, Coventry TechnoCentre	Regional Studies with Cambridge-MIT (CMI) “Regional Competitiveness” Cambridge; HEF/HEPI on “Responsible University”, Oxford.	
August, 2003	WM HEIF II consultation organised by MIE with a Regional Consultant of HEFCE, at Warwick University			
October, 2003	WM WMHEA HEIF 2 Conference Aston University			

* The author gave papers with these events.

Appendix 3 Notes on Learning Regions, Cluster Development and Universities

1) Learning Regions and Universities

The concept of a 'learning region' has emerged in recent years as a "theory-led development model" (Hassink, 2001:223) which aims at achieving and /or supporting collective learning processes. The learning region describes those places that offer the 'right' institutional environment to encourage both private and social learning processes. The concept was coined by academic authors such as Richard Florida (1995) and Kevin Morgan (1997) in the field of innovation studies and economic geography, synthesising some ideas from evolutionary economics and theories on the role of spatial agglomeration (Lagendijk and Cornford, 2000:216). It is argued, "regions must adopt the principles of knowledge creation and continuous learning", whereby they must in effect become "learning regions"(Florida, 1995:532).

According to Florida, learning regions are "collectors and repositories of knowledge and ideas, and provide an underlying environment or infrastructure which facilitates the flow of knowledge, ideas and learning" (1995:528). In Florida's learning region perspective, all regions, he posits, must adopt the principles of learning in the provision of a series of inter-related infrastructures in production, human capital, physical and digital communications, alongside an effective system of industrial governance.

In the European context, the analysis of the learning region focuses more on the "contributions that social capital and trust make to supporting dense networks of inter-firm relationships and the processes of interactive learning" (Wolfe, 2001:8). For example, Asheim (1998:3 cited in Landabaso et al., 1999) defines a learning region as "representing the territorial and institutional embeddedness of learning organisations and interactive learning". In this light, the focus is on the extent and quality of the institutional infrastructure that constitutes a key element of the regional innovation systems discussed above. Indeed, these are seen as an attempt to constitute a *model* towards which actual regions need to progress in order to respond most effectively to the challenges posted by the ongoing transition to a learning economy (OECD, 2001a: 23; see also, Asheim, 1996: 391-4). It is characterised by regional institutions, which facilitate individual and organisational learning through the co-ordination of flexible networks of economic and political agents (OECD, 2001a: 24).

These concepts of learning regions quickly travelled from the domain of innovation policy to other policymaking domains, such as skill-oriented business support, lifelong learning, and then into the realm of higher education. The concept has had an appeal for

regional policy makers because it facilitates the broadening out of local technology policies to areas of business development and skills improvement (Lagendijk and Cornford, 2000: 216).

Universities have found particular interest in the concept of the learning region, particularly at a time when they are facing severe budgetary constraints from central government. Their home region can be a potential source of students and research income, and may provide some answers to the increased demands for the universities to be accountable for their social and economic contribution to society. Embedding in local partnerships and strategy-making also endows the universities with social legitimacy and support. Lagendijk and Cornford illustrate this with an example of a university that has embraced the learning region as institutional strategic discourse. In the opening speech of the academic year 1998-1999, the Vice Chancellor of the University of Maastricht used the concept of a learning region not only to promote the regional embedding of the university, but also explicitly as “a way to create more independence from the central state”, presenting the learning region as a key strategic response to the continuous budget cuts imposed upon universities (Lagendijk and Cornford, 2000:217).

In this light, it is important to note that to be part of the learning region is seen as the strategic positioning on the part of the university creating new opportunities and resources independent of the control of the national government. It is therefore not appropriate to presume that universities are integrated into the theoretical frameworks such as regional innovation systems or learning regions by default. What determines institutional behaviour most is the interests and strategies of each university based on its history, current resources and expertise, and future aspirations in relation to central government and other stakeholders in society, which may or may not be regional actors. In this light, regional institutions do matter, but analysing the role of local or regional institutions to the exclusion of all others does a disservice (Gertler, 1997:56). The region is *strategically selected* as an organisational field for the specific interests of the institutions. Universities can be regional institutions but sometimes they choose not to be for their strategic positioning in the multi scale organisational field.

The concept of the learning region may have been successful in mobilising specific actors such as universities, colleges and firms, forging policy networks and communication across various regional actors, including researchers, and allowing the promotion of their home regions as learning regions (Lagendijk and Cornford, 2000:216). However, even those regions which have explicitly adopted the learning region as a strategic policy objective have demonstrated “widely diverging trajectories of development” towards their goal (OECD, 2001a: 24). There are significant differences not only in the types of policies that they pursue but also in their existing social and economic circumstances. The latter is particularly

significant in terms of investigating the importance of *institutionalisation* processes at regional level.

2) Cluster development

Another influential theory-led development model is the cluster approach developed by American economists such as Porter (1998), Krugman (1991) and Enright (1995). They argue that internationally competitive industries are spatially concentrated in a few nations and regions. According to this theory, not only the kind of relationships is regarded as an explanation for industrial competitiveness but also the spatial clustering is the important explanatory factor. The cluster idea seems to have become a world-wide fad: from the OECD and the World Bank, to national governments, to regional development agencies, to local and city governments, policy makers at all levels have become eager to promote local business clusters (see Chapters 6 and 7). It has become “a sort of academic and policy fashion item” (Martin and Sunley, 2003:6).

Porter’s (1990) work on national competitiveness shows that the interplay between the “competitive diamond” of four sets of factors- firm strategy, structure and rivalry; factor input conditions; demand conditions; and related supporting industries - is fundamental to the competitiveness of firms, regions and nations. The cluster is seen as a geographically localised grouping of interlinked businesses and the competitive diamond is seen as the driving force for cluster development. Porter suggests that a nation’s most globally competitive industries are likely to be “geographically clustered” within that nation (Porter, 1990:120).

The enduring competitive advantages in a global economy are often heavily localised, arising from concentrations of highly specialised skills and knowledge, institutions, rivalry, related businesses, and sophisticated customers (Porter, 1998:90).

The standard rationale for cluster policies is that they can help promote the supply of those local and regional public goods which are absent due to public failure (OECD/IMHE, 1999). According to Martin and Sunley, there are four typical public goods promoted by cluster policies (2003:23-4). First, cluster policy emphasises the benefits of creating co-operative networks and encouraging dialogue between firms and other agencies. Some cluster policies start by appointing brokers and intermediaries to organise these dialogues so that a better co-ordination both between public and private agents and between different public agencies are encouraged (Lagendijk and Charles, 1999). Second, cluster policy often involves collective marketing of an industrial specialism raising the public relations profile of particular economies. Third, cluster policy provides local services for firms such as financial advice,

marketing and design service. It is recommended that local service provision is targeted on particular specialisms meeting specific local needs. Universities as technology support organisations may play an important role in this. Fourth, cluster policies identifies weaknesses in existing cluster value chains and attract investors and businesses to fill those gaps and strengthen demand and supply links (Brown, 2000).

However, the evidence of a positive association between clustering and innovation is not consistent (Martin and Sunley, 2003:22). Saxenian (1994:161) points out that

...spatial clustering alone does not create mutually beneficial interdependencies. An industrial system may be geographically agglomerated and yet have limited capacity for adaptation. This is overwhelmingly a function of organizational structure, not of technology or firm size.

Furthermore, many scholars stress that clustering or industrial agglomeration may also be responsible for the loss of national or regional competitive advantage (Grabher, 1993; Hassink, 2001:223). Cluster creation is a highly contingent process in which the various actors embedded within previous social relationships and institutions try to manipulate the environment for their benefit (Kenney and Von Burg, 2000:220).

The concept of a cluster has had major impact on policy-makers whilst most of the work by economic geographers have been largely ignored (Martin and Sunley, 2003:8-9). One of the reasons is that the focus of cluster theory is on the determinants of 'competitiveness' of firms, industries, nations and regions, which resonates closely with the growing emphasis given by politicians and policy-makers concerned with industrial competitiveness in today's global economy. The concept of a cluster has been a very influential policy tool in the organisational field of regional development (Lagendijk and Cornford, 2000: 214-5). It is true that there is little explicit empirical investigation of institutionalisation processes and the social and knowledge networks in Porter's works (Martin and Sunley, 2003:22).¹ However, the cluster as a concept has managed to mobilise social actors in the organisational field (Lagendijk and Cornford, 2000: 214-5). It is important to look at clusters not as "bundles of economic benefits" but as "regions of constructed benefits" (Kenney and Von Burg, 2000:220). The cluster policy initiatives seem to be relevant to supporting the new shape of industrial organisations in the knowledge-based economies (Hassink, 2001:223), and it *may* provide some empirical and theoretical basis for newly oriented regional innovation policies.

¹ The cluster concept may not be a useful analytical tool and it may be seen as "chaotic" (Martin and Sunley, 2003:10) and "vague, impressionistic neologisms" (Martin, 2001). Martin and Sunley (2003:22) argue that the social dimensions of cluster formation and cluster dynamics remain something of a "black box" in Porter's work.

The cluster concept and cluster policies need to be located as part of the wider dynamics and evolution of industry and innovation more generally (Martin and Sunley, 2003:17-8). The interactions of cluster policies and the institutional responses of universities is one of the institutionalisation processes that this thesis is interested to look at in one of the later chapters (see Chapter 7).

Appendix 5

Appendix 5.1 Maps showing Regional Boundaries of English Regions

The United Kingdom comprises Great Britain and Northern Ireland; Great Britain consists of England, Wales, and Scotland. The Isle of Man and the Channel Islands are not part of the United Kingdom. The Isle of Scilly are included as part of Cornwall throughout.

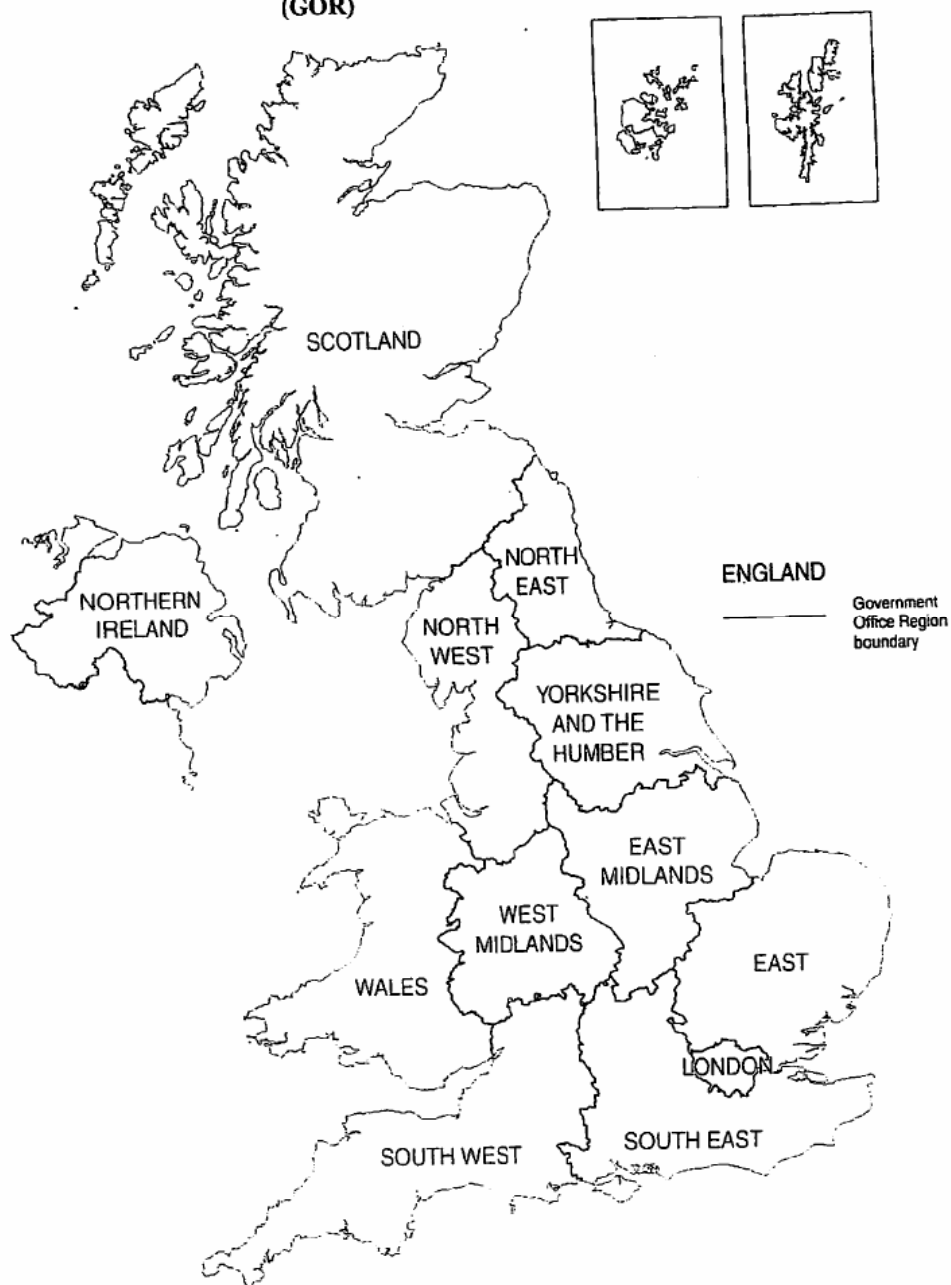
The statistical regions of the United Kingdom comprise the Government Office Regions (GORs) for England, Wales, Scotland and Northern Ireland. The Government Office for the North West merged with the Government Office for Merseyside in August 1998. The Government Office for the East of England is (formerly referred to as the Eastern Region) presented as East. (Map A).

Apart from the GORs, there are a number of other regional classifications. Prior to the introduction of the GORs, regional statistics were presented on the basis of the Standard Statistical Regions (SSRs) of the United Kingdom. (Map B). For other regional classifications, see Map C-I.

The diagram shows the difference between GORs and SSRs.

Map A

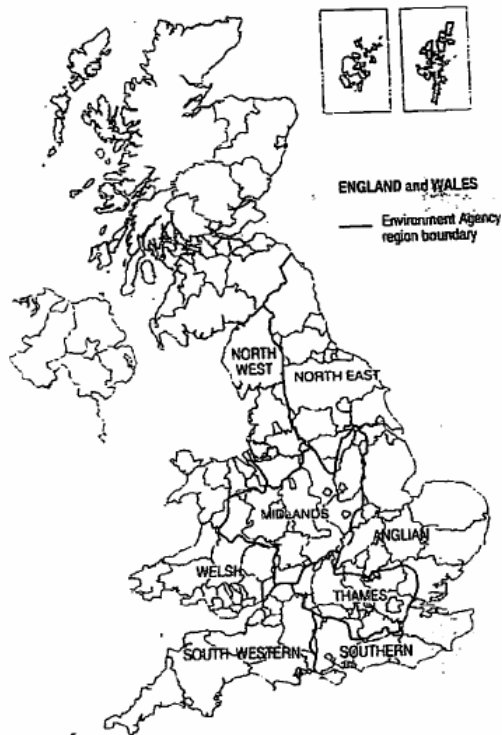
Statistical Regions of the United Kingdom
Government Office Region
(GOR)



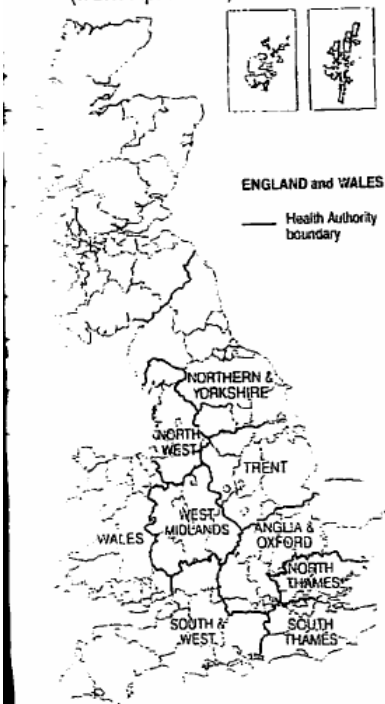
Standard Statistical Regions



Environment Agency regions

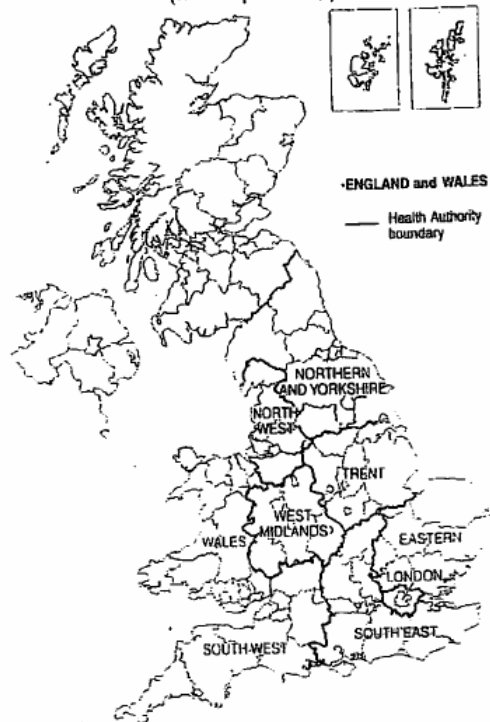


-S Regional Office areas (from April 1996)



Map C-J

NHS Regional Office areas (from April 1999)



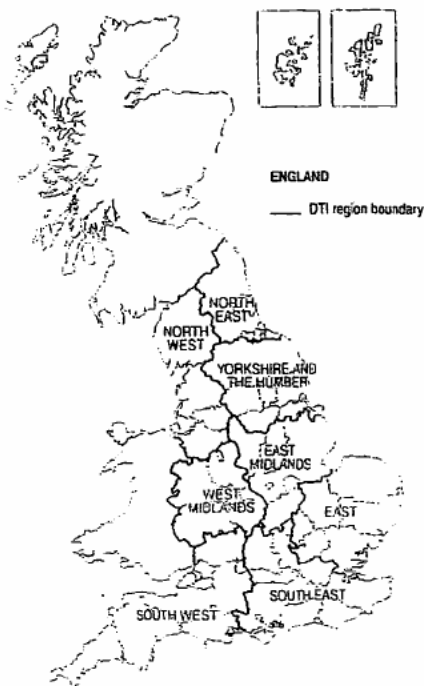
Police Force areas



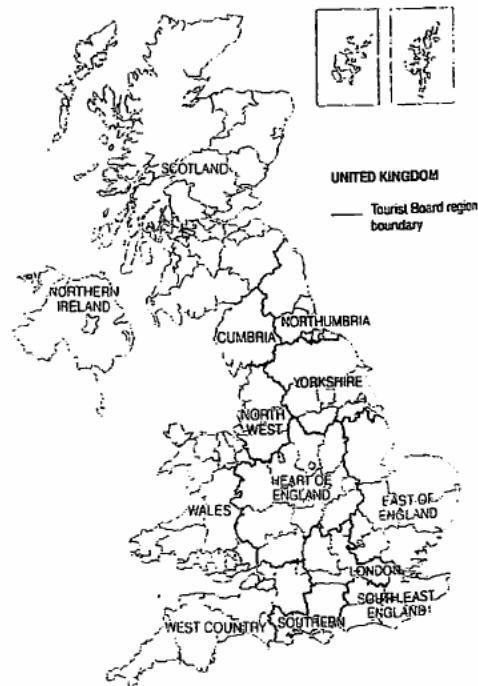
Prison Service regions



Department of Trade and Industry regions



Tourist Board regions



Standard Statistical Region (SSR)		Government Office Region (GOR)
NORTH	Cleveland# Durham# Northumberland Tyne and Wear	NORTH EAST
	Cumbria	
NORTH WEST	Cheshire# Greater Manchester Lancashire# Merseyside	NORTH WEST
YORKSHIRE AND HUMBERSIDE	Humberside# North Yorkshire# South Yorkshire West Yorkshire	YORKSHIRE AND THE HUMBER
EAST MIDLANDS	Derbyshire# Leicestershire# Lincolnshire Northamptonshire Nottinghamshire#	EAST MIDLANDS
WEST MIDLANDS	Hereford and Worcester# Shropshire# Staffordshire# Warwickshire West Midlands	WEST MIDLANDS
EAST ANGLIA	Cambridgeshire# Norfolk Suffolk	
	Bedfordshire# Essex# Hertfordshire	EAST
	Greater London	LONDON
SOUTH EAST	Berkshire# Buckinghamshire# East Sussex# Hampshire# Isle of Wight# Kent# Oxfordshire Surrey West Sussex	SOUTH EAST
SOUTH WEST	Avon# Cornwall Devon# Dorset# Gloucestershire Somerset Wiltshire#	SOUTH WEST

Counties prior to local government reorganisation.

Based on Regional Trends (1998 and 2000)

Appendix 5.2 Science Enterprise Centres and the Regions

The constitution of each SEC differs in the nine English regions.¹ The North East Region and the West Midlands Region made regional collaborative bids, and have all HEIs as members of their SECs.² East of England, South East and South West SECs are run by single institutions (University of Cambridge, University of Oxford and University of Bristol). In the East Midlands, the first round of SEC was single institutional bid (Nottingham), and then enlarged to other institutions in the region.

In Yorkshire and Humberside, the existing regional consortium, SEC was established based on an existing White Rose Consortium (three research-led universities in the Region, see p. 287).³ In 1999, Professor Sir Gareth Roberts, the then Vice-Chancellor of the University of Sheffield, greeted the announcement as a positive endorsement of the White Rose Partnership:

The motto of the Government Competitiveness White Paper, published last December, was 'collaborate to compete'. Our Consortium does just that. I am confident that this collaboration will make a substantial difference to the regional economy and to the three universities involved.

The North East Centre for Scientific Enterprise (NECSE) entails collaboration between Durham and Newcastle Universities with some involvement from the other three universities in the region, namely, Teesside, Sunderland and Northumbria.⁴ *In the North*

¹ In Scotland, the Scottish Parliament, Ministers, Scottish Enterprise and the Higher Education Institutions are all committed to increasing productivity, competitiveness and entrepreneurship in Scotland. The Scottish Institute for Enterprise (SIE) is a new partnership between industry and the universities which aims to turn this commitment into practical action. The Institute's approach is consistent with the requirements of *A Smart, Successful Scotland* and builds on the partnership which has been developing between CMI, other SECs through NCN and other international networks.

² In the West Midlands Region, some higher education colleges are associate member of MIE, the regional SEC. See Chapter 7.

³ <http://www.whiterose.ac.uk/AboutWhiteRose.cfm> access date 22/07/03

Performance Indicator	White Rose	Oxford	Cambridge
Staff (RAE 2001)	2467	1906	1728
Total Income (£m)	602	408	397
Research Income (£m)	211	206	192
Postgrad Research Students (FTE)	3530	3065	3780
Industry, Commerce and Public Corporations Research Income (RA4 1995 – 2000 £m)	68	53	51
Engineering and Technology Research Income (RA4 1995 – 2000 £m)	93	28	45

⁴ The Centre is administered from the University of Durham. The NECSE, as part of its successful bid for Science Enterprise Challenge funds, was awarded funds to be made available for science and engineering curriculum development. The Curriculum Development Fund monies have been allocated

West, Manchester Science Enterprise Centre is a partnership between UMIST and the University of Manchester in collaboration with Manchester Metropolitan University and the University of Salford (UMIST Ventures and Campus Ventures are supporting organisations). The Centre has also received further funding to expand and incorporate the University of Liverpool into the initiative.

In the East Midlands, UNIEI (University of Nottingham Institute of Enterprise and Innovation) builds on the strong foundations established by the University of Nottingham and a successful enterprise in Higher Education initiative in the late 1980s. A bid led by UNIEI has now brought £2m to the region to set up an East Midlands Science Enterprise Network (EMSEN), which brings together all the region's higher education institutions. The network aims to promote enterprise skills development and commercialisation of research in the HE sector, establishing research projects and teaching programmes for students and regional businesses. UNIEI has extensive international links with Europe, the mid-west USA and the Far East.⁵

In the West Midlands, the Mercia Institute of Enterprise (MIE) was launched by Lord Sainsbury in January 2001. The Institute is the focus for the largest collaboration among the Science Enterprise Centres in England. Warwick and Birmingham University are the lead partners, with membership of the Universities of Wolverhampton, Staffordshire, Coventry, Aston, Keele, Central England in Birmingham, and the Open University and others. Advantage West Midlands, the Regional Development Agency for the West Midlands, strongly supports the creation and development of the Institute, which forms a key element in the Region's Innovation Strategy. The Board of Management was chaired by the CEO of Advantage West Midlands (see Chapter 6 for the detail).

In London, there are three SECs. The Centre for Scientific Enterprise is a joint venture between University College London and London Business School, drawing upon their unique and complementary skills and resources to develop an entrepreneurial spirit for the exploitation of science and technology. The Entrepreneurship Centre at the Imperial College of Science, Technology and Medicine was launched in January 2001. Finally, SIMFONEC (Science Ideas to Market, Focused on Enterprise and Commercialisation) was formed in the second round of government funding, in 2001. It incorporates four London

to each university for projects that will meet the aims and objectives of the NECSE, i.e. all projects had to demonstrate that the funding will enable and enhance enterprise and entrepreneurial activities within their subject discipline.

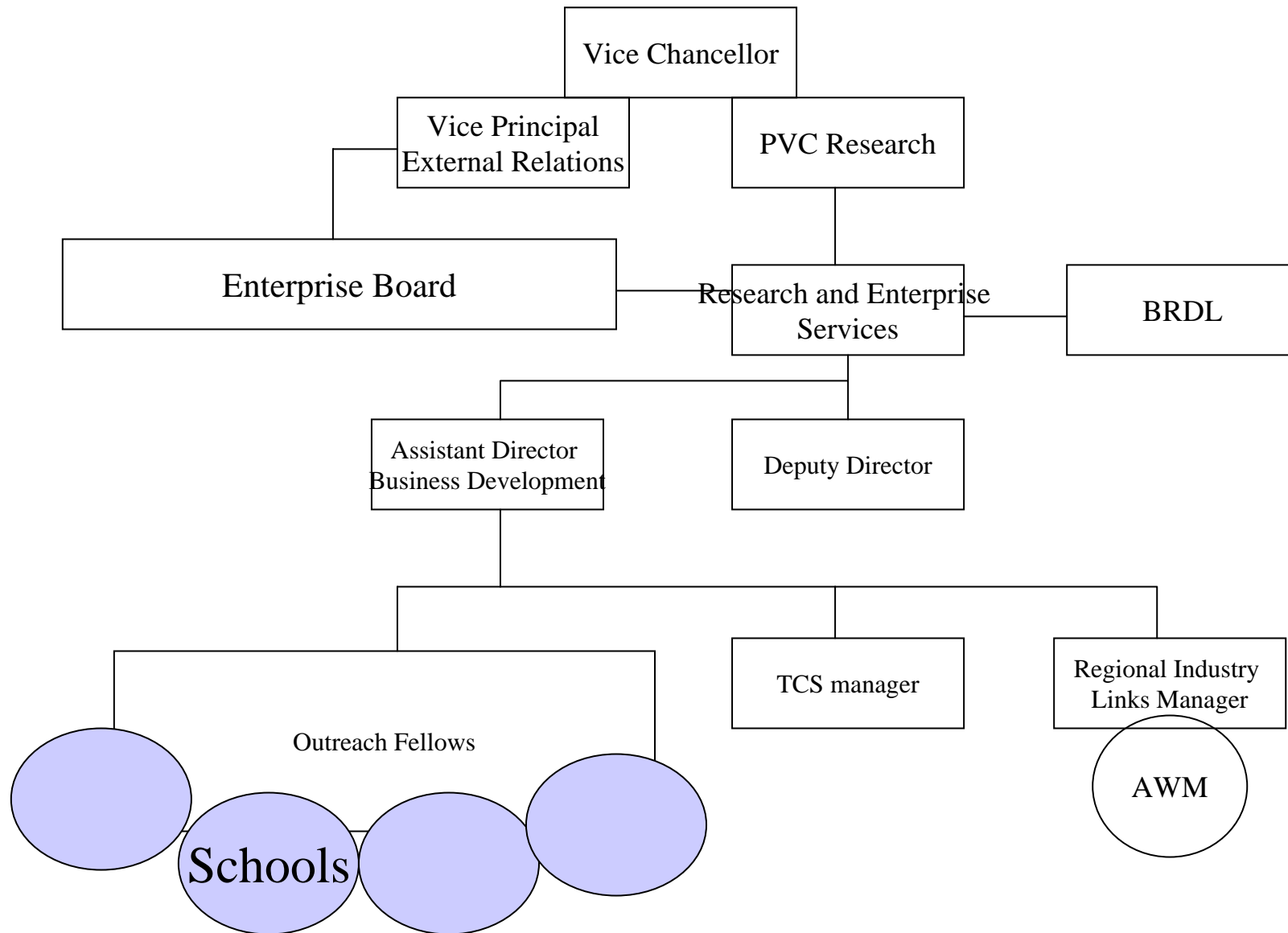
⁵ For example, the Zernike Group in Holland specialise in science park management and venture capital funding; the University of Michigan, USA bring a partnership with Ford focusing on advanced manufacturing engineering and technology transfer; and research and teaching into entrepreneurship work is developing through the newly opened campus in Malaysia and the Universitas 21 network.

institutions: City University; Queen Mary College, University of London; King's College London and the Royal Veterinary College.

As already mentioned, in East of England, South East and South West Regions, SECs are run by single institutions (University of Cambridge, University of Oxford and University of Bristol). In the South West Region, Bristol Enterprise Centre (BEC) is part of Bristol University's Research and Enterprise Development and, initially, a single institution SEC. Its mission is to "to create a vibrant, entrepreneurial culture at the University of Bristol, which encourages the establishment and growth of technology-based business". However, BEC have now joined forces with the Universities of Bath and Southampton under the Wessex Enterprise Centre (WEC). WEC has access to a combined research portfolio of over £550 million. Together they work to exploit that intellectual capital and ensure greatly increased returns to the Universities and the regional and national economies.

The Cambridge Entrepreneurship Centre (CEC) has been established at University of Cambridge to train, develop and support the people who will make new knowledge-based ventures successful. The Centre operates throughout the University of Cambridge and in partnership with the local business community. It has also formed strategic partnerships with MIT's Entrepreneurship Centre and CERAM the business school for Sophia Antipolis in France. In the South East, Oxford Science Enterprise Centre is based at Oxford's Said Business School and focuses on business and entrepreneurial skills training, primarily for the science-based departments. In these cases, there is less emphasis on the contribution to the region.

Appendix 6 Organisational Chart of Outreach Activities of the University of Birmingham



Appendix 7

Appendix 7.1. Geography and Making of the West Midlands Regional Economy

The West Midlands Region centres on the West Midlands conurbation, an informal term for Birmingham, the Black Country, and Solihull, which dominates the Region accommodating nearly half the region's population. The Region encompasses the surrounding shire counties of Warwickshire, Staffordshire, Shropshire, Herefordshire and Worcestershire. These are mainly rural areas with both older country and new, expanding towns, many of which have gained rapid growth in population and industry from the dispersion from the metropolitan area. The West Midlands metropolitan county area is largely urbanised and industrialised, situated about 110 miles (180 kilometres) north-west of London.¹ The total population of the metropolitan area is 2,551,700, making it the second largest urban area by population in Britain after London.²

From the late eighteen century onwards, the West Midlands regional economy was founded upon its basic industries, such as coal, iron and steel production, and especially metal working. When these industries declined in the late nineteenth century, they were replaced by growing engineering industries such as cycles, motor vehicles, machine tools, and aircraft which adapted the old-established metal working skills. But there have long been diverse non-metal businesses in cocoa and chocolate, tyres, carpets, glass and others. The experience of the West Midlands except in the Black Country in the inter war period contrasted sharply with that of other industrial regions.³ Unemployment rates were generally lower than in most parts of Britain, and the region's recovery from depression was more rapid. The dynamism of the West Midlands economy continued into the post-war period, when the region reinforced its position as Britain's leading manufacturing centre.

After the Second World War, the West Midlands vehicle, aircraft and engineering sectors were boosted by exports to European markets starved by the wartime destruction of their domestic productive capacity. During the 1950s, as European producers recovered, the

¹ The West Midlands County, containing the metropolitan district council areas of Birmingham, Solihull, Dudley, Sandwell, Wolverhampton, Walsall, and Coventry, was created in 1974 and abolished in April 1986. Before the creation of West Midlands County Council in 1974, the West Midlands conurbation covered the following areas: the county boroughs of Birmingham, Solihull, Warley, West Bromwich, Wolverhampton, Walsall, and Dudley; the municipal boroughs of Halesowen, Stourbridge, and Sutton Coldfield; and the urban district of Aldridge-Brownhills (Spencer, et al., 1986).

² Apart from Birmingham, the other two large urban centres in the old metro County area are Coventry and Wolverhampton, each with a population of around 250,000. All of these areas are largely urbanised and industrialised. The other major conurbation in the Region is on the northern edge around Stoke-on-Trent and Newcastle with a population of some 300,000 where the principal industry is still ceramics (pottery) with steel and mining in the past.

³ Beesley (1955, 1957) studied the inter-war West Midlands' car industries that provide some of the most penetrating insights into 'cluster dynamics' of the Region (Taylor, 2003).

market shifted in response to the expansion of British home demand. Protected from structural unemployment, West Midlands workers enjoyed high wages and high activity rates, leading to family income levels second only to those in the South East (Marshall and Mawson, 1987:96-7). Manufacturing provided 1.2 million jobs, 56.6 per cent of total regional employment at the start of the 1960s compared with 38.4 per cent in Great Britain as a whole (Smith and Collinge, 2000:111).⁴

However, it was during the late 1960s that the prosperity and resilience of the West Midlands economy began to flag as its industries, representative of British industry at large, continued to fail to match the levels of investment and productivity achieved by its chief international competitors in Europe, the US, Japan and other Far East countries during a period of intense international competition. Thus West Midlands manufacturing entered the 1970s in a poor position to withstand the economic shocks that characterised that decade. Changes within key sectors and companies in the Region are seen to have played a significant role. The car industry had been the largest single employer and sustained substantial proportions of West Midlands employment in the metal-based and engineering sectors. The Region's reliance on manufacturing industry, particularly on car production, left it exposed with ending of tariff protection, to growing foreign competition and the weakness of its service sector at a time when this was generally expanding.⁵

From the mid 1960s, economic indicators such as employment and investment shifted from a positive to a negative trend. GDP per head in the region, so heavily dependent on manufacturing performance, has been consistently low by comparison with many other parts of the country. In 1965 the Region enjoyed a GDP per head over 8 percent above the national average, second only to the South East. By 1981, this had fallen to almost 10 percent below the UK average (Marshall and Mawson, 1987:99). The transition from a traditional to an advanced industrial economy proved difficult, and during the 1970s and 1980s the region suffered rapid employment loss, particularly in the areas most dependent on manufacturing, which are the conurbation and the medium size towns (Spencer et al. 1986 cited in Ayres et al 2002:64). Successive recessions, intensified competition, and lack of investment in plant, innovation and skills had together brought about the imminent collapse of its industrial base.

⁴ Coal mining still provided 55,000 jobs and metal manufacturing including automotive 40.5 percent of regional employment compared with 19.5 per cent for Great Britain, with 100,000 more jobs than all services added together (Smith and Collinge, 2000:111). The loss of manufacturing jobs has far outweighed the impact on production and GDP with a major factor in this being job cuts accompanying the introduction of new technology.

⁵ The concentration on metal-related manufacturing stems partly from its very success in the 1950s and early 1960s, and from failure of the regional economy to develop or attract new industries not least because its success had generated relatively high labour costs while the industrial development certificate control prevented the building of new or extensions in industrial floor space and regional policy aimed to force firms to move out to areas of higher unemployment.

Unemployment rose steadily from the mid-1960s to 3.0 per cent in 1971 and 5.9 per cent in 1976. In particular, the years 1981 to 1983 saw unemployment in the region reach 15.3 per cent, involving 354,000 people which were concentrated in particular localised urban areas (Smith and Collinge, 2000:112). Nevertheless, as elsewhere, in the UK, the total number of people in employment has continued to grow, even if many now worked in far less well-paid jobs relative to the past.

Changes since then have been noted. Although per capita GDP in 1998 was still only 92 per cent of the UK average, the West Midlands' relative economic performance improved throughout the 1990s. The regional industrial structure has shifted from manufacturing towards service activities such as business and finance, hotels and catering and other services such as leisure, logistics and retailing though often these have been dependent on manufacturing. As Dahlstrom puts it, the restructuring of the West Midlands from the 1960s till today can be illustrated by the shift in the industrial structure from "a total dominance of manufacturing to one where the service sector is by far the largest" (Dahlstrom, 1999:6).⁶ Furthermore, the UK has been currently experiencing a manufacturing recession brought on by the pound's over-valuation in relation to the Euro and, until recently, by high interest rates and weak consumer confidence. The growth of certain service industries has been the vital engine of locally-based economic growth.

The Tables below on relative annual GDP growth rates reflect recent manufacturing and service sectors and their restructuring in the Region.

Table 6.A. Recent and forecast annual GDP growth rates*

⁶ It is argued that many of the new service jobs are likely to be in the public sector and in public-sector supported services such as health, education and training (Bryson et.al., 1996:164).

Total GDP	1997	1998	1999	2000	2001
West Midlands	3.6	1.7	1.7	2.8	2.5
UK	3.4	2.5	1.8	3.2	2.7
Manufacturing GDP	1997	1998	1999	2000	2001
West Midlands	0.7	-1.9	-0.9	3.6	2.6
UK	1.0	0.1	-0.5	3.7	2.6
Service GDP	1997	1998	1999	2000	2001
West Midlands			3.1	3.5	3.0
UK			2.6	3.8	3.2

(*per cent per annum growth based on Cambridge Econometrics' forecast made in December 1999, from Smith and Collinge, 2000:114, 117)

Table 6.B Total estimated average annual GDP growth

Total GDP	1995-2000	2000-2005
West Midlands	2.3	2.6
UK	2.7	2.6

(*per cent per annum growth based on Cambridge Econometrics' forecast made in December 1999, from Smith and Collinge, 2000:118)

GDP growth and positive change reflect successful capital investment in buildings, plant, design and often innovation. However, as Smith and Collinge point out, under-investment has long been recognised as a problem over many decades in Britain and specifically in the West Midlands and Birmingham.

Indigenous investment in the Region has been boosted by inward investment and, until 2003, the West Midlands has topped the list of regions for foreign direct investment in the UK (Smith and Collinge, 2000:120). It is worth mentioning one of the new towns in the West Midlands Region in terms of its relationship with direct foreign investment and its institutional networking. Telford has become a dynamic centre for inward investment which has now brought in some 140 overseas companies from 18 countries employing 16,000 people. The highest numbers of foreign-owned companies are from the US (36). Telford also boasts the largest number of Japanese manufacturing companies in one town in the UK. The reason for this high level of Japanese investment is that in the early 1980's, many Japanese companies were seeking manufacturing bases in Europe to enable them to maximise

opportunities offered by the European market.⁷ However, North American and Japanese manufacturing companies are now being attracted by the lower-cost environment offered in East European countries such as the Czech Republic and Hungary, and it is from this quarter that competition for investment and for automotive components is expected to come. This is the problem the Region is facing with the ongoing trend of globalisation of the economy and increasing global outsourcing.⁸

It is common to find newer kinds of foreign inward investment taking the form of 'mergers and acquisitions' and strategic alliances. Now overseas companies own the main car producers in the Region. Jaguar in Coventry and Land Rover in Solihull are owned by Ford (US), Peugeot in Coventry is owned by PSA Peugeot Citroen (France) (Tilson, 1998 cited in Dahlstrom, 1999:7). Rover until 1995 included Jaguar, Land Rover and LDV plus Rover in Longbridge, Birmingham. It was publicly owned after going bankrupt from 1977 until sold to BMW (Germany) in 1995, when the die was already cast by wider changes taking place in the industry. The events that took place in the auto industry in the West Midlands during March to May 2000 can be described as "historical disturbances" (Bentley, 2000, 125). BMW announced its intention to sell off Rover, in the first instance to Alchemy Partners, a venture capital company. The Rover plant at Longbridge was eventually sold for £10 (sic) to Phoenix Consortium, headed by a former chief executive of Rover. Land Rover was sold to Ford for £1.8 billion (for the detail, see Bentley, 2000:141-6). LDV, which makes small vans, remains independent, surviving an abortive partnership with Daewoo, the Korean firm.

The largest urban centre in the Region, the City of Birmingham,⁹ lies in the middle of the metropolitan area of the West Midlands. Birmingham's traditional specialities are the manufacture of motor vehicles and the processing of non-ferrous metals; it is also known for production of railway carriages, jewellery and small metal products and, in the past, small arms, and, outside the metal sector, chocolate, tyres and until recently beer. The development of the City of Birmingham and its rise to a position of first provincial British town occurred

⁷ Telford is a new town, one of 25 new towns built by the Government over the past 50 years. As one of the main growth centres in the West Midlands region the population has grown steadily from 74,000 in 1968 to 123,000 in 1996. The population is forecast to grow to 136,000 by 2006. The Telford Development Agency provides supports to both UK and overseas companies in the initial stage of investment, advice on training, recruitment and retention of staff, and 'Aftercare Service'. An Inward Investment Partnership (IIP) provides services to new companies moving into Telford and works as a liaison with local/government authorities, higher education, and professional services.

⁸ Regional development literature has in general been fairly pessimistic about the likelihood of supplier spillovers from foreign investment. One reason for this is that foreign subsidiaries tend to purchase fairly low proportions of their inputs from host regions, especially when compared with domestic firms (Collis and Roberts, 1992; Potter et al., 2003:43).

⁹ The City of Birmingham has a population of 961,041 (census 1991). It is governed by Birmingham City Council, which had a budget of around £1 billion for 1998, employing a total of 453,251 people in 1997. It is the largest local authority in Great Britain, including London, as London is at the moment divided into numerous local authorities.

rapidly during the 19th century and are closely linked to its industrial development. Unlike other great Victorian cities, such as Liverpool and Manchester, Birmingham did not suffer much industrial decline in the 1930s. It was not until the 1970s and especially the early 1980s that de-industrialisation hit the city seriously. Between 1980 and 1991, the city of Birmingham lost 40 per cent of its manufacturing jobs (*The Economist* 1998).¹⁰ Following the collapse of the city's manufacturing industry, the City Council has been trying to diversify the industrial base by developing new, high value, high growth activities.

Metropolitan, Unitary and District Local Authorities

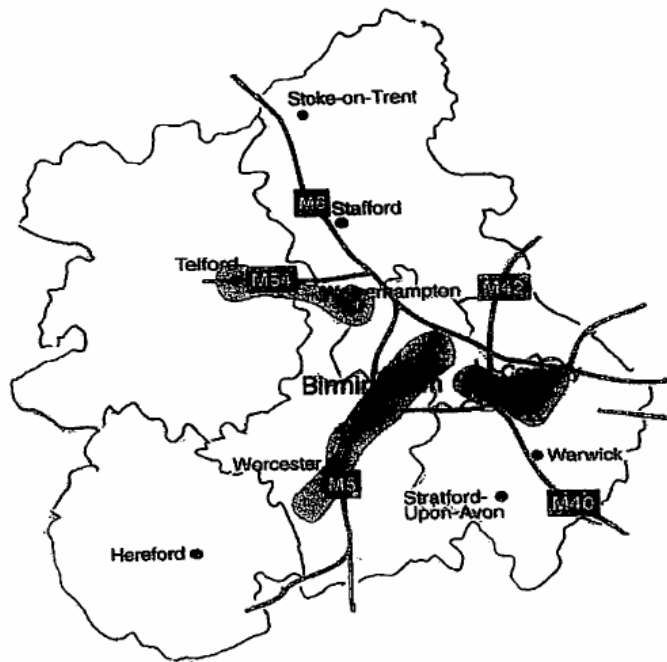


¹⁰ Birmingham and its surrounding region lost 300,000 jobs between 1979 and 1992, which disguises the disappearance of 430,000 jobs in manufacturing alone because of the creation of employment in the service sector (Bryson et.al 1996:164). By 1982, the unemployment rate in Birmingham had risen more than 20 per cent with its inner areas worst affected (Loftman and Nevin, 1996:187).

Index 7.2 Map of High Technology Corridors in the West Midlands on

High Technology Corridors

Used to diversify the region's economy by attracting high technology, high value added businesses through the presence of research institutions, universities and property opportunities



Priority development areas for the Corridors

- A38 Birmingham to Malvern
 - Nanotechnology
 - Medical Sciences
 - Commercialisation from QinetiQ
 - Photonics
- Wolverhampton-Telford
 - ICT/e-learning
 - Polymers
 - Advanced engineering
- Coventry, Solihull, Warwick
 - ICT
 - Transport Design
 - Grow-on space for high tech companies

(from AWM, 2003b)

Appendix 7.3 Interview with ‘outreach’ units of Universities and HEIs in the Region

- Business Partnership Unit at Aston University [quotations based on notes from interview January 2002]
- Research and Enterprise Services at the University of Birmingham [quotations based on notes from interviews in November 2002; December 2002]
- The Corporate Development Centre at the University of Central England in Birmingham [quotations based on notes from interview 7 March 2001].
- Business Partnership Unit, Commercial Affairs Department at Coventry University [quotations based on notes from interview March 2001]
- The Business Development Office at Keele University¹ [quotations based on notes from interviews at Research and Business Development Office, November 2001; Business Development Office, July, 2002]
- The Regional Office/Research and Commercial Development at Staffordshire University [quotations based on notes from interviews on December 2001 and September 2002]
- The Regional Office/Services to Business at Wolverhampton University [quotations based on notes from interview June 2001].
- The Research and Development Services Office/Research Support Services at Warwick University [quotations based on notes from interviews at July 2001; January 2002].
- Learning Business Centre, Newman College of Higher Education [based on notes from interview in February 2002].
- Harper Adams University College [based on notes from interview in September 2002].

Business Partnership Unit at Aston University [quotations based on notes from interview January 2002] Aston University is a “highly focused, niche market institution”, very focused with industry and commerce.

It is not new for us to have industrial links, and many of the staff have been working with industry for years and years and have naturally integrated the links into their activities.

The cultural change started 20 years ago. Before that there had been an extremely high wall around the university.

We didn’t have good interaction with industry especially in terms of commercialisation of research. Between 1981-96, a Vice Chancellor, a British man who spent 20 years at Stanford University, changed Aston completely. He tried to restructure inside the university through quality of teaching and research. Now we are much better placed as to commercialisation. For 15 years, restructuring happened,

¹ Business Development Office is part of the Office of Research & Enterprise (ORE), which was created in 2002. As part of the University Secretary's Office, ORE brings together the combined knowledge and expertise of individuals in the areas of Research, Knowledge Transfer and Innovation to support, assist and develop new opportunities for staff, students, business and the community. <http://www.keele.ac.uk/research/> access date 03/08/03.

period of change and new development. It took a long time. Cultural change was everywhere, which takes almost one generation.

What is new to the University is the commercialisation of research such as applying for patents, developing licensing and starting companies. The new challenge for the University is to “get everyone on side in terms of staff internally to achieve the commercialisation goal”. The current Vice Chancellor used to be a chief executive of a public company. He brought in a new financial director. They were much more supportive of commercial activities at the University. At the same time, the government put emphasis on commercialisation through HEROBC, HIEF, and other various schemes to encourage universities to commercialise. “Both things came together and have made big changes”.

Without HEROBC funding, the Business Partnership Unit would not exist.² Aston received £1.1. million from HEROBCI and also received £489,000 from HEIF single institution bidding and the team is rapidly expanding. The University is part of nationally funded regional collaborative programmes such as CONTACT, Mercia Spinner and MEDICI, which all promote industry links and commercialisation of research.

The University as a whole is pushing third leg activities which are now promoted by the government. Incentives are provided at all levels which include financial incentives under IPR policy for patents and licensing, and ‘research credibility’ from industry related development,³ and, within departments, they work on “load models” whereby staff get points for the work they do.

The Head of the Business Partnership Unit perceives the growing financial opportunities made by AWM, and to have close links with AWM is seen as very important:

More and more is happening regionally because a lot more money is being cycled through AWM; that money is to be used within the region not outside the region; that is interesting.

Aston has a quality rating of 5 for all its departments and is known as a nationally and internationally renowned institute. It benefits the Region greatly because:

We are bringing the best possible world class research activities for the benefit of businesses in the region. To create the mechanism to bring in the expertise is exactly what this unit is all about.

² BPU has been fast developing: at the time of the interview there were 5 staff growing to 9.

³ TCS counts as research credibility which forms part of RAE. The terms of condition of Aston University’s staff is to spend 50 days a year outside the university.

One of the difficulties of working within the Region is to work with SMEs because of the time and money available for SMEs.

We are not as focused on SMEs as many universities claim to be. ...We are trying to use the scarce resource of the university in as a profitable way as possible, and SMEs often cannot afford it.

However, as the European fund has a SME focus, BPU works closely with SMEs through European programmes. They link closely with West Midlands Innovation Network (WMIN) which is the main interface with SMEs. Aston's BPU has a consultant who works full time with that Unit looking at SME opportunities for universities.

Aston Science Park is run on a purely commercial bases by a private company which has access to capital funding, links with City, the Government Office, and AWM. The BPU is located between the University and the Science Park working as a facilitator between the two. The commercial links that the Science Park have help the University to commercialise its research activities. Aston has extremely good links with the City of Birmingham. The University work with the City in a number of ways, including with regard to the adjacent Eastside development, in close collaboration with Birmingham City Council, Economic Development Department. The University is heavily involved in Alliance for Knowledge Advancement (AKA), along with other higher education institutions along the A38 Corridor in the sub region.

Research and Enterprise Services at the University of Birmingham [quotations based on notes from interviews in November 2002; December 2002] The Office of Research and Enterprise Services,⁴ working with Birmingham Research Development Limited (BRDL)- the University's private commercial exploitation company-⁵ is responsible for promoting the links with the local community and has an extensive network of business interactions such as

⁴ The Office of Research Support was established on 1 January 1989. In 1996, the title was modified to Office of Research Support and Business Development (RSBD), in order to reflect a more active role and give greater emphasis to identifying and developing business opportunities for the University in research, training and the provision of related services. Research and Enterprise Services is the core service supporting the University of Birmingham in meeting two aspects of its Mission, to "maintain the international reputation for the highest quality of scholarship and research..." and to "serve Birmingham and the West Midlands region using our skills and knowledge and drawing on our international reputation to promote social and cultural well-being and to aid economic growth and regeneration."

⁵ In terms of exploitation of Intellectual Property, the University's own technology exploitation company, Birmingham Research and Development Ltd (BRDL), is in charge of a portfolio of over 100 patents, a team of three licensing executives and a yearly product development fund of £600K. The Licensing Team at BRDL is responsible for maximising the commercial potential of the University's intellectual property (IP) through a combination of licensing and spinning out of new companies thus both protecting and exploiting the University's intellectual property base.
<http://www.industry.bham.ac.uk/enterprise.htm> access date 18/08/03

licensing of new technology, research collaborations, vocational and personal development, training short courses.

The office of Research and Enterprise Services manages the Business and Industry Team as part of the HEROBC programme. The programme concentrates on business development in the form of consultancy, industrial research contracts and collaboration, CPD programmes and commercialisation. Since its beginning in 2000, the main work of the Business and Industry Outreach Programme is being delivered through the Business and Industry Outreach Fellows appointed in several Schools.

“The purpose of the Business and Industry Outreach initiative is to encourage businesses and industry to access and use the university’s research and development resources, and to help our own academics understand the benefits and potential pitfalls of working with business and industry. It is essential that we build stronger bridges between industry and academia and the appointed Fellows will really make a difference.” [Assistant Director (Business Development)]⁶

Outreach fellows serve as the interface between the University and industry, the region, and as the interface between the Schools and the University’s central body, which is Research and Enterprise Services. (See Chapter 7).

The Corporate Development Centre at the University of Central England in Birmingham [quotations based on notes from interview 7 March 2001]. In 1995, the CDC was came into its current form.⁷ Eleven of its staff are fully funded by the University. A further nine full- and part-time posts are externally funded.⁸ Earlier, university-Industry linkage existed mainly through European funding⁹ but it was un-coordinated. HEROBC started in January 2000 and the HEROBC funded Outreach team came into its current form of a full team in April 2000.¹⁰ So the purpose of the Outreach team was to bring co-ordination

⁶ The office changed name from RSBD (Research Support and Business Development) to Research and Enterprise Services in 2002. The quotation is from

<http://www.industry.bham.ac.uk/outreachteam.htm> access date 10/09/03

⁷ The Enterprise Unit pre-dated the current CDC formed in 1985.

⁸ University of Central England, Corporate Development Centre “Corporate Development Centre, Past, Present and Future” 25 May 2000.

⁹ Income from Industry link: £7.5 million turnover in 1999 (cited in bid for HEROBC). From European fund. Plus TEC, City Council fund.

¹⁰ Outreach Team ---Outreach Project Manager: (f/t)-----Assistant
Outreach Project Staff Development Co-ordinator
4 Outreach agents (2/2.5 days p/w)
Automotive and Engineering: Technology Innovation Centre
Business and Finance Development: Business School, Built Environment
Creative Industries: Institute of Art and Design, Conservatoire
ICT Computing

and collaboration into the University's industry linked activities. It works as a co-ordination and the customer focused point. Because of the decentralised nature of the University, previously it was difficult for a company to get access to the University, especially when the nature of work involves different areas of expertise such as engineering and business. The role of the Outreach team is to co-ordinate these activities, and Outreach agents have been appointed in the four sectors which were chosen based on the West Midlands *Regional Economic Strategy* (AWM, 1999).

It is not possible for the Outreach team of four to cover everything. So they have formed a "focus group" in each faculty which brings people together who have got links with industry or networks group of lecturers involved in student placements.

Outreach team is A Contact point, not *THE* contact point. University has been already doing business in many fields. Existing links go on as they are. The focus is more on internal links: identifying staff needs and building up capacity internally. It aims at facilitating cultural change in the University. Helping people to go out to companies.

Outside the university, the Outreach team is linking up with agencies and organisations such as AWM, WM Arts, Royal Society of Arts and so forth. Links with companies are through the agencies because linking with companies takes time and cannot be covered by sending out direct mails.

Business Partnership Unit, Commercial Affairs Department at Coventry University [quotations based on notes from interview March 2001] Coventry University sees itself as a regional player, and the significance of wealth creation at regional level is very much recognised. Coventry University was not successful in its bid for HEROBC first round. With the money from HEROBC II, the Business Partnership Unit was created within the Commercial Affairs Development in December 2000. The Unit aims to enhance University's interactions with business and the wider community.¹¹

BPU aims to co-ordinate activities within the University, and between universities and with the University and business to create a culture of change. At Coventry, these activities used to be done separately by academics at departmental level.

Now BPU is collecting information from each school and mapping business needs. Except for the engineering department, which has its own business development officer, the business linkage is developed through individual academics. BPU tries to make these links more formal. Business Service Officers can be seconded from departments and the role of Business Service Officers is to identify new opportunities. There is a need for more staff in the BPU; and there is a need for improving links with University staff and external staff.

¹¹ It has 6 staff, a project manager, information officer, and 3 business service officers.

Schools prefer to have each money and activities, they don't want to share information. Sharing information concerning the partnership with business is sometimes difficult.

Internal cultural change to work with industry as a university rather than departmental or individual level has just started with HEROBC money.

Coventry University Enterprise Ltd (CUE) is the trading arm of Coventry University Higher Education Corporation and offers a range of services to companies of all sizes, research organisations, higher education, and public bodies, with particular specialisms in innovation support and European partnerships. Coventry University Enterprise is part of the Europe-wide Innovation Relay Centre network,¹² supported by the European Commission to broker technology transfer agreements between UK and overseas companies. The secretariat of the SAIL programme which promotes university-industry links across European regions is based at CUE (see Chapter 7, p.245). Another link with Europe is the EPI Centre, which operates to promote European awareness, policy and funding opportunities to both the public and private sectors. Through the Managing Director of CUE, the University has a strong link with *Regional Innovation Strategy*. Both CUE and Innovation Relay Centre were part of MONTAGE, a partnership between regional universities to work with SMEs in the Region, funded by the ERDF. MONTAGE was completed 31 December 2001.

The University is part of Coventry and is a very important player in the sub-region. The Vice Chancellor sits on the board of Warwick Solihull Partnership (CWS Partnership), and the University, particularly through its Centre for Local Economic Development (CLED),¹³ contributes to the Coventry Community Plan by setting up the mechanism for deciding the plan for the delivery priorities for Coventry Economic Development. The University manages a number of ERDF and ESF funded projects.

¹² The Midlands Innovation Relay Centre is the local node within a network of 68 regionally based centres covering the entire European Union and much of Central/Eastern Europe. The Innovation Relay Centre network is the official EC innovation and technology transfer support service, providing companies with access to European partners for technical cooperation, research, licensing, manufacturing and joint venture agreements. The Midlands IRC is the regional support centre for Coventry and Warwickshire, Derbyshire, Herefordshire, Leicestershire, Lincolnshire, Northamptonshire, Nottinghamshire, Rutland, Shropshire, Staffordshire, the West Midlands and Worcestershire.

¹³ [based on interview with a researcher at CLED, February 2002] "We are represented in local committees, local partnership meetings. I am also involved in Coventry Clothing Partnership through my work with the clothing industry funded by ERDF and ESF". Coventry Clothing Industry is represented by a small cluster of 60 companies heavily with Asian backgrounds. They are facing global competition in very labour intensive industry. I try to help them become more competitive".

The Business Development Office at Keele University¹⁴ [quotations based on notes from interviews at Research and Business Development Office, November 2001; Business Development Office, July, 2002] The University has always played a role as a research- based organisation, but ‘exploitation’ of the research and development of research results into product is a new phenomenon. Universities are moving towards this direction, and there are negative responses from academics.

Keele University hardly marketed itself to business at all. All the applications came from the individual links of academics. The University never tried to get work with industry. HEROBC funding gave the opportunity to that situation. It is to try to develop the skills not only internally but to work with those outside the University.

HEROBC money was used on two aspects.

- a) Business development side—Business development and marketing including TCS, strengthened applied research; looking for new clients trying to economic realisation, centrally located but work across faculties
- b) Learning activities — student focused activities such as work related learning, student placement, employability skills incorporated into degrees.

Keele has been a research-intensive university and, as such, research has been considered as a “general good”.

The previous Vice-Chancellor saw commercialisation such as contract and consultancy as a way of making money to do research—“quick and dirty way to get money” to get the essential thing to go on. HEROBC message has changed this view. Outreach is seen as good for its own sake.

The role of Business Development Manager is to encourage academics who haven’t worked with industry to develop links. *Keele in Business* is a new brand name for these business development activities.

It is not as difficult to have new clients outside as to persuade academics on campus. ...Academics are overstretched. All universities have to consider what can be the incentives for academics.

The difficulty of encouraging outreach at the University level was pointed out:

¹⁴ Business Development Office is part of the Office of Research & Enterprise (ORE), which was created in 2002. As part of the University Secretary's Office, ORE brings together the combined knowledge and expertise of individuals in the areas of Research, Knowledge Transfer and Innovation to support, assist and develop new opportunities for staff, students, business and the community. <http://www.keele.ac.uk/research/> access date 03/08/03.

Ideally, partnership between individual academics, departments and industry should be constructed. The department must benefit from commercial activity as a collective body rather than as individuals.

The University has played a significant role in the sub-region of North Staffordshire and has had a strong link with the local authority.

The borough of Newcastle is a relatively small market town. In the town, the University is the largest employer. Lots of University staff live in the borough. The University is in a unique position: there are very close links with the University and the local council. Chief executives meet each other, lots of interconnections. This is more than normal with universities. For the local authority, in a small borough council, having a good university is very positive.

The development of the science park has been supported, encouraged by the local council. With regard to the links between the University science park and the companies located within the park, university-industry links and collaboration do not occur although, generally, “the university is seen as good thing, the park a good place to locate”.

North Staffordshire has lost two main economic drivers: local mining and the pottery industry. Both Staffordshire and Keele Universities play big parts in regeneration policies: retaining graduates, training skills, attracting inward investment and starting up of high-tech companies.

There are big roles for the universities, which is much more highlighted than it used to be. The University has new roles as mediators and facilitators in partnerships and collaborative relationships. When different bodies work together there are tension between the organisations. University can be part of the glue.

Collaborative working relationships have been built up with some intermediary organisations such as Manufacturing Advisory Services, and the HEROBC II-funded collaborative mechanism, CONTACT, through a Field Officer for the Staffordshire and Shropshire area.

I am busy with internal marketing. There is not time to get out to talk to industry except on one or two occasions organised by chambers of commerce or other bodies. The CONTACT field officer makes a difference by ‘opportunity generating’ in the region.

An operational link is being established with Business Links, as well as having a high level link with local authorities. Efforts are made to identify general themes in the area.

Although the university is situated in the West Midlands Region, business links and partnerships are strong outside the Region such as in Manchester and North Wales and Lancashire. Many students also come from these areas. From a research funding perspective,

region is another tune added to the already existing national and European tunes, which is “in disharmony”.

There is a very little (research activity) on regional side. If the University was situated more central in the West Midlands, there could have been more to offer to traditional industry in the Region.

Reflecting this geographical dimension, the attitude of the University seems to be more flexible about the RDA regional boundary than other universities in the Region are.

It is important for the universities to make the right partners, rather than restricting itself within the ‘region’ as such.

At a sub-regional level, Keele works very closely with Staffordshire University, and they are complementary to each other. The relationships between Keele and Staffordshire used to be more competitive but are getting more collaborative these days. Whilst Staffordshire takes in local students, Keele recruits more widely. In relation to Staffordshire University, Keele sees its function as to bring external skills into the area.

The Regional Office/Research and Commercial Development at Staffordshire University

[quotations based on notes from interviews on December 2001 and September 2002] The origin of the University was as a training college and it has never lost that vocational orientation: the employability agenda is very important. It has always been on the leading edge of what is happening in industry, keep updating and working with practice. The needs of local employers are always considered, and IT training and manager training have been provided. The University has long relationships with big companies in the area and has provided management training to big corporations such as Wedgwood. In the case of small companies, it is more difficult because they cannot afford to pay for training. Under European funding (ERDF Objective 2 &3) small business training has been conducted. The University has worked closely with the Single Regeneration Budget funds. For Staffordshire University, the third leg activity and engagement with a local agenda is at the core of the University activity, right from the Vice-Chancellor down, “we are not just paying lip service to this”.

The Regional Office was renamed from Commercial Development Unit several years ago to reflect the increasing consciousness of the University as a key thing in the Region both outside and inside. The idea was “by working partnership, to deliver what the customer wants” in the Region. In 2002, the office again changed its name from Regional office to Research and Commercial Development, recognising the link between the research and

commercial activities, the necessity of new knowledge, new services, working regionally, nationally and internationally.¹⁵

Staffordshire University was successful in receiving the maximum amount from HEROBC gaining over £1 million. Out of the 3 years plan, overall there are 20 to 30 different strands of activities which have impact on the University such as student placements including TCS, short courses, consultancy, training, and networking with partners.¹⁶ Another example is the opportunity to become a patron of the Chamber of Commerce, which enables them to attend meetings, and access information to meet their regional agenda. A new research centre to pioneer work in economic and social regeneration has been launched at the University with HEROBC money.

There is a general trend among academics to work more closely with industry. However, there are issues surrounding resources, time, money, rewards, training in terms of how the academic community works. We visit companies before academics can get in.

Internally, the University is creating various mechanisms to promote commercial activities.

Internally we have an enterprise reps network. We would access wider expertise initially to the enterprise reps; it's a better way than going through Deans. We are launching an expertise gateway. There is an opportunity within academic and other communities as well, who want to get involved in industry, to register interest, when they would be available to do this.

In terms of commercial activities, the University has a strong local focus although this is not exclusive.

We focus on companies locally. We are not an international brand like Warwick and Aston are, we haven't got resources to do that. But we do work internationally. We have good relationships. If we look at commercial work, we very much focus locally. We can tap into local resources such as the regeneration agenda, AWM, local companies. We have very close relationships with the Technology Park. Teaching, we need to look at international recruitment. Research, we need to recognise our international profile.

As to contact with local firms, they work closely with Business Links and other intermediary organisations. The University works very closely with CONTACT sub-regional field officer.

¹⁵ Around the same time, Keele University was also reorganising the Office and Business Development Office which was incorporated as part of the Office of Research & Enterprise.

¹⁶ In the first stage, the funds enabled the University to create a 'first stop shop' in the Regional Office to improve the customer service and to provide an easy way to contact the university for companies and partners looking for support.

“We see CONTACT as our extended sales force” which adds an extra resource to the University.

Staffordshire University along with Keele University are engaged in the sub-regional regeneration agenda. The University has lots of links with AWM, and Keele and Staffordshire put joint bids for the sub-regional agendas, but there is a difficulty in collaborating with other HEIs regionally through WMHEA as each sub-region has its own issues and strategies.

The Regional Office/Services to Business at Wolverhampton University [quotations based on notes from interview June 2001]. Being a “First Class Regional University” is the strategy of Wolverhampton University.

The University of Wolverhampton aims to be a first class regional university making a major contribution to the social and economic regeneration of the West Midlands (Vice-Chancellor 2001).

The University has a long history of providing support to small and medium-sized businesses (SMEs) throughout the West Midlands and in working closely with organisations responsible for social and economic regeneration. The geographical characteristic influences the way the University operates. The University has geographical advantage as Wolverhampton is the only university to cover the Black Country and Shropshire where there are many SMEs. The Birmingham area is more competitive with 5 higher education players.¹⁷

On behalf of the University, Services to Business, as part of the Department for Innovation and External Funding¹⁸ is responsible for generating long term relationships with businesses and communities in the region and promoting the University's expertise and facilities.

HEROBC I started April 2000, but really got started in December 2000. There are three enterprise development manager posts funded by HEROBC at Wolverhampton. The areas were decided according to regional needs identified by the RIS and was decided by the market niche for the University. One is for tourism and leisure in the Schools of Sports Performing Arts and Leisure and the Business School; designing and technology in the Schools of Engineering, Built Environment, Arts and Design; and health and the environment in the Schools for Applied Sciences, Nursery and Midwifery, and Health Studies.

The Competitiveness Centre located in the University's Telford Campus, aims to bring together the knowledge-based expertise within the University of Wolverhampton for the

¹⁷ In Birmingham, there are three universities (Aston, UCE, Birmingham), one university college (Newman) and one higher education college (Food and Tourism).

¹⁸ It changed the name from Customer Services in Regional Office to Services to Business in the Department for Innovation and External Funding in 2002.

benefit particularly of small to medium-sized enterprises in the West Midlands, but also businesses throughout the UK. The Regional Research Institute was established to provide client focused research and consultancy to meet the needs of local, regional and national communities and organisations - both from the statutory and the voluntary & community sectors. Links between the University and the Science Park are not so strong. Not only technology, knowledge transfer, but business start-ups and exploitation of intellectual properties have not been so strong at Wolverhampton. Wolverhampton is located at the heart of AWM's Technology Corridor and these are the areas of potential development of the University in terms of its strong profile as a regional university, and recent collaborative mechanisms developing in the region.

The Research and Development Services Office/Research Support Services at Warwick University [quotations based on notes from interviews at July 2001; January 2002]. The University of Warwick has been contributing to the Region through drawing in students and enhancing the skills of the Region, hence benefits economic well-being of the Region.¹⁹ The University is represented in a various bodies in the Region such as:

- Economic development Unit
- CBI
- Coventry-Warwickshire-Solihull Partnership
- RDA management board
- RIS board operational committee
- Local chambers of commerce
- Business Links
- LSC.

Research and Development Services Office was developed as a single outward facing unit which aimed at trying to understand what is happening throughout the University, mapping activities and finding complementary and overlapping areas. The Business and Regional Support Unit (BRSU) covered regional links and TCS working as a catalyst, formalising the linkages with the Region through various departments that included continuing education through Warwick Manufacturing Group (WMG) and Warwick Business School.

Warwick has been involved in the links with industry since it was created in 1965. It went as far as a book called *Warwick PLC* was published in 1970 criticising the

¹⁹ University has always been very firmly embedded in the Region, particularly with Coventry and Warwickshire business interests (the University was created due to the pressure from trade unions, politicians and companies in 1965).

University's too close relationship with local industry. So this is not a new thing for the university. However, it is important to bear in mind that relationship with industry is only part of the picture of the university's whole activities. Third leg activities are all an integral part of the University, and have to be incorporated with the core activities of the University, ie. research and teaching. To go beyond this makes the University's strategy difficult. 3rd leg has to be part of the whole strategy.

HEROBC I started in early 2000, and the HEROBAC programme was used to "institutionalise" Warwick's relationship with the Region. BRSU has been the catalyst and HEROBC project has given very much focus within the Business and Regional Support Unit. The role of BRSU has been as "a facilitator as well as creator of new links".

Depth and breadth of participation has increased because of the (HEROBC) initiatives with people and resources.

WMG is important for links with industry through student placements such as TCS and technology transfer in general. With support from Europe, there are initiatives of the University such as Innovation Direct, operating primarily through Warwick Manufacturing Group, which help companies looking for industrial manufacturing solution.

Warwick Ventures which was established as part of the University in 2000 looks at the commercialisation of research such as managing intellectual property issues, licensing or creating a university company. Through Warwick Ventures, business development managers are based in departments to look for business opportunities.

We have a global coverage of the University keeping our eyes open for business opportunities.

Business development managers are recruited from outside the university with intellectual property experience and that of developing businesses. Warwick Ventures has deliberately been made part of the University because it is important to be seen as part of the University.²⁰

Two of the most tangible examples of the University's contribution to the local community are the University Science Park and the Warwick Art Centre. Warwick University has a strong link with the Warwick Science Park.²¹

²⁰ Prior to 2000, number of starting up company was one, but now it has increased to six [interview, Director of Warwick Ventures, June 2003].

²¹ By 1981 unemployment rate in Coventry rose to 17.5% and the City Council opened a dialogue with Warwick University to establish whether the University could offer any support. The most tangible result was the proposal to create a science park with the explicit aim of attracting new industry and new technological skills into Coventry (Shattock, 1999:124). In 1984, the University of Warwick Science Park was opened on a site adjacent to the University, a joint venture between the University and the local authorities of Coventry City, Warwickshire and West Midlands Enterprise. This has developed to

The University is part of the Coventry, Warwickshire, Solihull partnership along with University of Coventry and has been actively engaged with sub-regional activities including local partnerships for ERDF and ESF projects and Regeneration Zones.

Partnerships are working better at sub-regional level where local players are very well networked, and most people trust each other. It's been a slow process taking 3-4 years but now it works. You tend to work together and has knock on the effect of that.

The relationship between Warwick and Coventry University is characterised by the combination of competition and collaboration.

Competition: both have good engineering and business schools. Collaboration between engineering is extremely good and, at office level, there are trust and reciprocity.

There is collaboration at a regional level, too. For example, as mentioned already, the 'ceramics challenge for the 21st century' was an initiative involving Staffordshire Training and Enterprise Council (TEC; then), local universities (Staffordshire and Keele) and the ceramics trade associations. University of Warwick, which is not in the sub-region, provided R&D capabilities for new companies in the area. This can be seen as an example of new partnerships and network emerging at regional level between universities which may lead to regional innovation systems.

Learning Business Centre, Newman College of Higher Education [based on notes from interview in February 2002]. Newman College was founded by the Catholic Education Council in 1968 designed for teacher training. It has good links with small businesses through its IT department. In the first round of HEROBC, Newman made a collaborative bid with Westhill College. There were two main areas relevant to HEROBC initiatives:

- English as a Second Language
- IT for community of ethnic groups

12 months later, all institutions were encouraged to bid again. All institutions were told that they wouldn't get single bid. But as Newman bid collaboratively for the first round, they could bid as a single institution as well as collaboratively as a regional bid (CONTACT). For the second round, the full amount received as a single institution was £285,000, and the funding lasts until July 2004. Under HEROBC I (with Westhill College), Learning Business Centre was set up. Under HEROBC II (a single institution bid), 3 posts were established for the Centre. The main remit of the Centre is to offer IT training to business and to run programmes on English for business purposes targeting mostly for those who use English as a

become one of the UK's most successful Science Parks with satellites in Coventry and Warwick and managed space in Solihull.

second language. Under HEROBC I funding, the Centre implements a government initiative scheme, University for Industry (UfI) - Learning Direct Centre.²²

Harper Adams University College [based on notes from interview in September 2002]. Founded in 1901, Harper Adams University College is the UK's largest center for higher education for food, agriculture and rural business sector. The College's core subject areas include agriculture, engineering, surveying, agrifood marketing, countryside management and generic business studies (Universities UK/HEFCE, 2001b: 15). For many years Harper Adams has maintained a number of specialist Centres which have worked with business and community client groups. The HEROBC funding allowed additional projects from the Centres and initiated new areas of activities. It is particularly aimed at active promotion of business start-ups and support for micro and SME businesses. Under HEIF, Harper Adams made a single institution bid, targeted at groups in the rural economy and across the rural/urban divide. The focus is initially on the West Midlands Region, and the bid aligned with AWM's RES. One of the projects, "Women in Rural Enterprise (WIRE)", aims to expand a network model to achieve business start ups and to improve business survival and growth rates among rural women entrepreneurs.

²² It provides internationally accredited on-line courses.

Appendix 8

Appendix 8.1. Chronological sequences of events in the North East and Yorkshire and the Humber

Box 8.1 North East HE Collaborative mechanisms

1983 Higher Education Support for Industry (HESFI)

1995 Knowledge House - ERDF, HEROBC

1999 Universities for North East (Uni4ne)

2001 North East Centre for Scientific Enterprise (NECSE) -SEC

NorthStar -RDA

2002 Knowledge North East -HEIF

Box 8.2 Yorkshire and Humberside HE Collaborative mechanisms

1989 The Regional Research Observatory –ad hoc partnership-

1993 Yorkshire and Humberside Universities (phase 1)

1997 White Rose Consortium –ad hoc partnership-

1997 White Rose Faraday Partnership

1998 YHUA set up a joint venture company

1999 White Rose Centre for Enterprise –SEC

2000 YHUA became a formal regional HE association including HE colleges

2002 Centres of Industrial Collaboration (CIC) -RDA

Appendix 8.2.Comparing HERA Secretariat

	Start	Number of HEIs inc. OU	Standard subscription fees exc.OU p.a.£ (approx.)	Location	Number of staff (FTE)	Title of the Head of the Office
Uni4ne	1983- HESIN 1999- Uni4ne	6	6K	RTC North Ltd, technology transfer company	Secretariat 3 plus Project staff 14	Manager
Yorkshire Universities	1993-	13	10K	Within HEI	4.5 core staff and 5 project staff	Chief Executive Officer
NWUA	1999	16	10K	Near RDA	Secretariat 5 plus project staff 7	Chief Executive
EMUA	Nov. 1999	10	7.5K for 7 full members; the rest pay less	Within HEI	Secretariat 1.5 and 1 funded by RDA	Head of secretariat
WMHEA	Sep. 1999	13	Uni 5K HE 3K	Within HEI	Secretariat 2 plus 8 CIMs funded by RDA	Director
AUEE	Oct. 2000	11	Full member 5K Other 2.5K	Same as RDA	Secretariat 2	Executive Director
LHEC	1999	40	na	Same as London First	na	na
HESE	1999	25	Proportional to FTE student totals	Near RDA	Secretariat 6	Chief Executive
HERDA-SW	Aug.1999	14	Flat fee 5,050	Same as RDA	Secretariat 2 funded by core funding 2 funded by RDA and other grants	Head of Secretariat

The information is as of February 2003; number of staff often changes and, due to the various sources of funding, the information presented in this table is not very accurate.