Introduction to the Special Issue: Higher Education and Regional Development 9

The Engagement of Higher Education Institutions in Regional Development: An Overview of the Opportunities and Challenges 11

John Goddard and Jaana Puukka

Universities, Innovation and Regional Development: A View from the United States 43

Mark Drabenstott

A World of Competitors: Assessing the US High-Tech Advantage and the Process of Globalisation 57

John Aubrey Douglass

University Engagement: Avoidable Confusion and Inescapable Contradiction 87

Chris Duke

Globally Competitive, Locally Engaged: The Case of Kentucky 99

Aims C. McGuinness, Jr.

Provincial University of Lapland: Collaborating for Regional Development 115

Ari Konu and Eero Pekkarinen

The Contribution of Higher Education to Regional Cultural Development in the North East of England 125

Eric Cross and Helen Pickering

The Dilemma of the Modern University in Balancing Competitive Agendas: The USQ Experience 139

Bill Lovegrove and John Clarke

Benchmarking University Community Engagement: Developing a National Approach in Australia 153

Steve Garlick and Anne Langworthy

Societal and Economic Engagement of Universities in Finland: An Evaluation Model 165

Jari Ritsilä, Mika Nieminen, Markku Sotarauta and Jukka Lahtonen
The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation’s statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

Also available in French under the title:

Politiques et gestion de l’enseignement supérieur
Volume 20, n° 2
Numéro spécial: ENSEIGNEMENT SUPÉRIEUR ET DÉVELOPPEMENT RÉGIONAL

Corrigenda to OECD publications may be found online at: www.oecd.org/publishing/corrigenda.

© OECD 2008
Higher Education Management and Policy

- A journal addressed to leaders, managers, researchers and policy makers in the field of higher education institutional management and policy.

- Covering practice and policy in the field of system and institutional management through articles and reports on research projects of wide international scope.


Information for authors wishing to submit articles for publication appears at the end of this issue. Articles and related correspondence should be sent directly to the editor:

Prof. Michael Shattock
Higher Education Management and Policy
OECD/IMHE
2, rue André-Pascal
75775 Paris Cedex 16
France

To subscribe, send your order to:
OECD Publications Service
2, rue André-Pascal, 75775 Paris Cedex 16, France

2008 subscription (3 issues):
EUR 120   USD 154   GBP 82   JPN 16 800

Online bookshop: www.oecdbookshop.org
The Programme on Institutional Management in Higher Education (IMHE) started in 1969 as an activity of the OECD’s newly established Centre for Educational Research and Innovation (CERI). In November 1972, the OECD Council decided that the Programme would operate as an independent decentralised project and authorised the Secretary-General to administer it. Responsibility for its supervision was assigned to a Directing Group of representatives of governments and institutions participating in the Programme. Since 1972, the Council has periodically extended this arrangement; the latest renewal now expires on 31 December 2008.

The main objectives of the Programme are as follows:

- To promote, through research, training and information exchange, greater professionalism in the management of institutions of higher education.
- To facilitate a wider dissemination of practical management methods and approaches.
Editorial Advisory Group

Elaine EL-KHAWAS
George Washington University, United States (Chair)

Philip G. ALTBACH
Boston College, United States

Chris DUKE
RMIT University, Australia

Leo GOEDEGEBUURE
University of Twente (CHEPS), Netherlands

Ellen HAZELKORN
Dublin Institute of Technology, Ireland

Salvador MALO
Instituto Mexico de la Competitividad, Mexico

Vin MASSARO
University of Melbourne, Australia

V. Lynn MEEK
University of New England, Australia

Robin MIDDLEHURST
University of Surrey, United Kingdom

José-Ginés MORA
Technical University of Valencia, Spain

Detlef MÜLLER-BÖHLING
Centre for Higher Education Development, Germany

Christine MUSSELIN
Centre de Sociologie des Organisations (CNRS), France

Jan SADLAK
UNESCO-CEPES, Romania

Jamil SALMI
The World Bank, United States

Sheila SLAUGHTER
University of Georgia, United States
Andrée SURSOCK
European University Association, Belgium

Ulrich TEICHLER
INCHER-Kassel, Germany

Luc WEBER
Université de Genève, Switzerland

Akiyoshi YONEZAWA
Tohoku University, Japan
# Table of Contents

Introduction to the Special Issue ........................................... 9

The Engagement of Higher Education Institutions in Regional Development: An Overview of the Opportunities and Challenges
John Goddard and Jaana Puukka ........................................... 11

Universities, Innovation and Regional Development: A View from the United States
Mark Drabenstott .......................................................... 43

A World of Competitors: Assessing the US High-Tech Advantage and the Process of Globalisation
John Aubrey Douglass .................................................. 57

University Engagement: Avoidable Confusion and Inescapable Contradiction
Chris Duke ........................................................................ 87

Globally Competitive, Locally Engaged: The Case of Kentucky
Aims C. McGuinness, Jr. .................................................. 99

Provincial University of Lapland: Collaborating for Regional Development
Ari Konu and Eero Pekkarinen ........................................ 115

The Contribution of Higher Education to Regional Cultural Development in the North East of England
Eric Cross and Helen Pickering ........................................ 125

The Dilemma of the Modern University in Balancing Competitive Agendas: The USQ Experience
Bill Lovegrove and John Clarke ........................................ 139

Benchmarking University Community Engagement: Developing a National Approach in Australia
Steve Garlick and Anne Langworthy .................................. 153

Societal and Economic Engagement of Universities in Finland: An Evaluation Model
Jari Ritsilä, Mika Nieminen, Markku Sotarauta and Jukka Lahtonen ...... 165
Introduction to the Special Issue

Higher Education and Regional Development

Questions surrounding the local and regional impact of higher education institutions (HEIs) have been around for a long time. In the United Kingdom there was pioneering work on the economic impact of Cambridge on its region (Segal Quine and Partners, 1985) and other studies in the 1980s, but the issues have become more focused in recent years around two poles of interest: the contribution that universities can make to the knowledge economy and the critical role that regions play in determining national economic success. This has prompted a major OECD/IMHE study, the findings of which have been published in a report entitled Higher Education and Regions: Globally Competitive, Locally Engaged (OECD, 2007). The report was followed by a conference, under the same title, held in Valencia, Spain, from 19 to 21 September 2007, which brought together many of the participants in the original research programme. This special issue of the Journal derives from that conference and seeks to present a balanced collection of thematic and case study contributions.

The first two articles are written from contrasting perspectives: Goddard (the Academic Leader of the OECD/IMHE study) and Puukka (the Project Manager of the study and the co-author and editor of the OECD report) write mostly from an HEI point of view, while emphasising the shared interests with regions; Drabenstott writes from a regional economic interest, and describes the role HEIs play within that interest. Goddard and Puukka show how HEIs and regions are affected by the presence of global competition. Drabenstott argues that variation in regional economic performance is much wider than national performance and that “regions have become the drivers of national economic performance not the other way round”.

Douglass and Duke follow: Douglass describes how market factors have influenced knowledge accumulation and high technology innovation in the United States and the key role of central and state governments in the creation of knowledge-based economic areas. Duke (one of the contributors to the OECD report) argues that universities, in contributing to regional economic
development, have to live with increasing diversity of mission where third strand or third mission may be more effectively provided by universities acting collectively within a region, rather than by each institution trying to meet all the demands that may be imposed.

These thematic articles are illustrated by accounts from regions themselves: McGuinness on the impact of a decade of reform in Kentucky aimed at the achievement of “a stronger link between post-secondary education and the future quality of life and economy of the population” of the state; Konu and Pekkarinen on the role of the Provincial University of Lapland (a consortium of HEIs) in the enhancement of human capital and innovation in a sparsely populated and remote region; Cross and Pickering on the contribution of the creative and cultural sector to regional development in the North East of England; and Lovegrove and Clarke on the mission of a dispersed, “service” University of South Queensland towards the extensive rural areas of southern and western Queensland. These examples of different approaches to HEI/regional partnership are reinforced by Garlick and Langworthy and Ritsilä et al. on benchmarks, criteria and methods of evaluating regional engagement in Australia and Finland respectively.

The picture that emerges from these articles is one of a new nexus of economic and social engagement between HEIs and regional development although universities, and especially research intensive universities, have a role in society that goes much beyond their region. What the OECD study and, I hope, this special issue confirms, however, is that the interaction between higher education and regionalism is a burgeoning area of legitimate interest for scholars and researchers.

The Editor

References


The Engagement of Higher Education Institutions in Regional Development: An Overview of the Opportunities and Challenges

by

John Goddard* and Jaana Puukka
Newcastle University, United Kingdom, and OECD, France

Across the OECD, countries, regions and higher education institutions (HEIs) are discovering each other. More and more partnerships are being established based on a growing appreciation of shared interests. This paper explores the drivers behind such engagement, from both HEI and regional development perspectives, the barriers to effective working and how these barriers are being addressed in practice in a variety of regional and national contexts. The paper concludes with suggestions as to how capacity for joint working between HEIs and regions can be enhanced through generic changes in policy and practice at the institutional, regional and national level.

* Academic Leader of the OECD project Supporting the Contribution of HEIs to Regional Development.
Introduction

In order to probe the drivers behind the engagement between higher education institutions (HEIs) and regions more deeply and to draw out general lessons from a myriad of local and national initiatives, the OECD initiated a major project entitled “Supporting the Contribution of HEIs to Regional Development”. Central to the programme was an in-depth comparative review of 14 regions across 12 countries. The review, conducted in 2005-06, aimed to synthesise this experience into a coherent body of policy and practice that could guide future institutional, regional, national and supranational reforms, and relevant policy measures, including investment decisions seeking to enhance the connection of higher education to regional communities. Current practice needed to be analysed and evaluated with sensitivity to various national and regional contexts. At the same time, the review was designed to assist with capacity-building in each country/region by providing a structured opportunity for dialogue between higher education institutions and regional stakeholders in order to clarify roles and responsibilities.

The review was primarily qualitative in nature, covering a wide range of topics and requesting supporting documentation. While regional development is often thought of in economic terms only, the template guiding an initial self-evaluation suggested a wider interpretation. It asked higher education institutions to critically evaluate with their regional partners and in the context of national higher education and regional policies how effective they were in contributing to the development of their regions. The key aspects of the self-evaluation were the contribution of research to regional innovation; the role of teaching and learning in the development of human capital; the higher education institutions’ contribution to social, cultural and environmental development; the role of higher education institutions in building regional capacity to act in an increasingly competitive global economy.

The regions (Table 1) ranged from rural to metropolitan and from peripheral to central regions. The higher education institutions included not only research-intensive, but also vocational and professionally-oriented institutions. At the national level, the review embraced devolved as well as highly centralised territorial and higher education governance systems.

The methodology chosen for the study was influenced not only by other OECD reviews, but also by the development-oriented evaluation projects...
 commissioned by the Finnish Higher Education Evaluation Council. The methodology consisted of the following elements:

- a common framework for regional self-evaluation developed by the OECD;
- a self-evaluation report by the regional consortium using OECD guidelines;
- a site visit by an international Peer Review Team;
- a Peer Review Report and a response from the region;
- analysis and synthesis by the OECD drawing upon regional case studies;
- a commissioned review of the literature on higher education and regional development (Arbo and Benneworth, 2007).

The programme focused on collaborative working between higher education institutions and their regional partners. It sought to establish a regional learning and capacity-building process. This made it necessary to engage in participatory learning within and between regions. Thus, the programme sought to actively intervene in the participating regions. To strengthen the partnership-building process, the OECD project guidelines requested the participating regions to build up regional steering committees with representation from the key stakeholders in the public, private and not-for-profit sector. The steering committees were charged with the role of driving the review process and partnership building in their regions.

### The regional development drivers behind engagement

Post-World War II regional policy in many OECD countries emphasised the need for intervention by the nation state to reduce disparities between central and peripheral regions. Public intervention took the form of financial support for established industries and the attraction of mobile investment in order to absorb surplus labour. There were also measures to equalise living standards between regions, including standards of primary and secondary education.

Significantly, higher education did not enter into the panoply of regional policy interventions. Many European HEIs which had developed to serve traditional industries during the later part of the 19th and first half of the
20th century were subsequently incorporated into national systems of higher education. In this process their local ties were weakened. However, in the United States where uneven regional development was not a federal responsibility, individual states did support public universities in serving the needs of their territories, building on the land grant tradition established in the 19th century. Indeed, state investment in higher education to tackle industrial decline in New England and to attract new federal investment in areas facing structural adjustment in agriculture in California laid the foundation for subsequent high technology corridors such as Route 128 and Silicon Valley. In Australia and Canada, where a federal structure of government was established, higher education played a key role in the development of the cities which were the gateways to the individual states, for example laying the foundations for the so-called “sandstone” universities in each of the state capitals of Australia. In Australia, regional problems were (and remain) essentially problems of underdeveloped city hinterlands and rural areas. Outside of the so-called “developed world” the priority of nation building around national capitals contributed to rising regional disparities with national universities being one of the magnets for internal migration.

The European post-war consensus around the need for state intervention to reduce core/periphery regional disparities broke down during the 1970s. This was associated with the onset of structural adjustment problems and the rejection of the post-war Keynesian models of economic regulation. These problems had particularly severe impacts on cities, including those in some core regions. The emergence of so-called “rust belts” – linked to traditional industries such as coal and steel, heavy engineering, and textiles which were now facing competition from newly industrialised countries – and the related decline of mobile investment seeking lower cost sites within industrialised countries undermined the basis of redistributive regional policy.

In response to the crisis, the emphasis in territorial and industrial policy switched towards indigenous development focused on small and medium-sized enterprises (SMEs) with a particular emphasis on the role of innovation in raising their competitiveness (Rothwell and Zegveld, 1982; Birch, 1987).

This shift of emphasis opened the way for links into the research base in local HEIs. It also coincided in the United States with the passing of the Bayh-Dole Act in 1980 which empowered universities to commercialise their own intellectual property. During the 1980s a growing body of academic literature underpinned the case for local or “bottom up” public intervention in the supply side of the local environment, supporting (or inhibiting) innovation. Studies of the so-called “third Italy” indicated that networks of traded and untraded interdependencies between SMEs could provide a fertile environment for innovation in traditional industries outside established urban agglomerations (Piore and Sabel, 1984; Brusco, 1986). Whereas in Italy these networks did not
involve HEIs, the experience of Silicon Valley in California and Route 128 in New England assumed totemic significance in relation to the possibility of creating new industrial districts or regenerating older districts through strong links with research-intensive universities.

Moving into the 1990s, the range of supply-side factors that regional policy makers deemed to be influencing economic performance widened. Most significantly, education and skills and the tacit knowledge gained through work-based learning became embodied in the concept of the “learning region” (Morgan, 1997; Malmberg and Maskell, 1997). This had resonances with the growing appreciation that innovation is not necessarily a linear process and could involve close interaction between producers and users, interactions which were best conducted face to face. Moreover, the role of students and graduates in “knowledge transfer on legs” and establishing the social relations between researchers and the business in which they work became increasingly apparent (see, for example, Audretsch and Feldman, 1996; Kline and Rosenberg, 1986).

During the 1990s, these perspectives began to be formally adopted in public policies to foster the development of “industrial clusters” rooted in particular places. The concept of the industrial cluster recognised that innovation is seldom isolated but systemic with the industrial cluster acting as a reduced scale innovation system. Clusters, in this instance, could encompass strategic alliances of HEIs, research institutes, knowledge-intensive business services, bridging institutions and customers. Cluster success required and encouraged flows of talented individuals, including students and graduates, and the creation of vibrant and exciting places.

Within the cluster, HEIs could assume an entrepreneurial role while firms developed an academic dimension. The emphasis was on a spiral model of interaction where a number of channels feed into the process including research links (the creation of new knowledge), information transfer (selling existing knowledge) and people-based transfer (students and staff) as well as spin-offs. In this model specialised centres and cluster discourse could provide a focus for both HEIs and the business community. It could involve embedding engagement in the core business processes of both HEIs and industry (see Porter, 1990, 1998, 2003).

Throughout the OECD there is now a convergence of innovation and territorial development policy. This is placing new demands on HEIs as innovation policy becomes more comprehensive. There is increased emphasis on education and training, employability, the quality and skills of the workforce, and lifelong learning. People and human resources are being brought into focus. There is recognition that initiatives to foster innovation and competitiveness need to take account of challenges of urban and regional variations in
unemployment, poverty and exclusion in a multi-cultural society. There are also aspirations to establish and foster creative and enterprising places where people and companies want to locate. Thus many towns and cities have been inspired by reflections on the new “creative class” and the global competition for talent which has led to increasing investment on place marketing and the branding of cities as “a nice place to live” (Florida, 2002).

In summary, regional policy which was redefined and narrowed down to technological innovation policy is now in the process of being ever broadened as other fields of policy are given an innovation signature and more agents and levels of government (city, regional, national, international) are drawn into the process of building innovative capabilities. From a rather narrow focus on high technology and manufacturing industry and the private sector, attention has been widened to include social and organisational innovations and business, consumer and public services (Arbo and Benneworth, 2007).

This broadening of regional policy has wide-ranging implications for the expectations placed on HEIs by cities and regions. They are now expected to participate in public and private partnerships and contribute to balanced region building. Whereas previously attention was focused on HEIs as a source of high technology innovations and new knowledge-based industries, these are now beginning to be regarded in a broader perspective, encompassing the whole social fabric of which HEIs are part. For example, the new emphasis on social innovation, tourism, the creative industries and welfare widens the academic domain from science and technology and medical faculties to the arts, humanities and social sciences.

In summary, for those agencies charged with city and regional development, HEIs are:

- a major businesses generating tax and other revenues;
- global gateways in terms of marketing and attracting inward investment in the private sector;
- generators of new businesses and sources of advice to existing businesses;
- enhancers of local human capital through graduate retention and professional updating of the existing workforce;
- providers of content and audience for local cultural programmes.

HEIs, particularly in highly centralised states, can also be key local agencies able to bring together within the territory different national interests in science and technology, industrial performance, education and skills, health, social inclusion, and culture.
The higher education drivers behind engagement

The longevity of universities as key institutions in the evolution of civil society is linked to their adaptability to changing circumstances, whilst maintaining key elements of continuity (such as the global connections which characterised the medieval foundations). The emergence of the Humboldtian university in 19th century Prussia was linked to the professionalisation of science, and to the requirements for specialised infrastructure to support it and to underpin “at a distance” the development of the state (Wittrock, 1993; McClelland, 1998).

The principle of “at a distance” is important because in many respects the research university that evolved in continental Europe during the 19th century can be described as a “denial of place” (Bender, 1998). This is because the ideal of scientific enquiry embodied in the modern university is to strive for universalism. Scientific claims to truth were deemed to be irrespective of time and place and the university had to have a mission that transcended its actual location. Indeed the notion of the university as a detached site for critical enquiry, exchange of ideas and advancement of knowledge for its own sake has been of vital importance to the creditability and legitimacy of the institution.

The nationalisation of science and education during the 20th century further enhanced the detachment of universities from places (see Crawford et al., 1993). Because of their importance to nation building, universities were no longer expected to rely on the patronage of churches, town councils and local elites. They now received their core funding from national governments and in return trained the cadres for the civil service and national corporations and for professions such as law, medicine, engineering and architecture. They were to contribute to new national identities and the cultural spirit which underpinned the nation-building process. All of this was based on a compact whereby the university rendered services to the state in return for a degree of institutional autonomy in terms of internal governance (Crawford et al., 1993; Clark, 1998).

Part of the US higher education system, however, developed in a different direction. Land Grant universities, which in the first instance promoted agricultural development, were regionally embedded “people’s universities” based upon widening access to education and service to the community.2

The second part of the 20th century witnessed a massive expansion of public investment both in research and development and in higher education. This had a profound impact on the universities that emerged in the previous century and their engagement with regions. The expansion of higher education typically took place outside the established universities which were regarded as too inflexible to meet the demands for new skills emerging in the workplace and from communities where they were not present. Thus we now speak of
HEIs, not just universities. The higher education map of most countries has been coloured in incrementally with a diverse set of institutions. Many of the new institutions are built on previous foundations, typically with a limited tradition of research (such as teaching and nurse education colleges). And many of them have a specifically regional mission.

In some countries this geographical dispersal of higher education has formed part of a conscious policy seeking to preserve the spatial distribution of the population and to achieve balanced regional development by addressing regional disparities. It has included also the objective of improving regional access to higher education. This has translated into policies to establish new HEIs in various regions, e.g. in Finland, Japan, Mexico, Norway and Sweden. This objective has also led to the recent emergence of non-public education institutions in Poland (OECD, 2008, forthcoming). However, in many countries dispersal of higher education has followed a simple logic of higher education expansion modified by political lobbying. This is not just a top-down phenomenon. Towns and cities have lobbied for “their” university.

The consequence is that many OECD countries have a highly diversified system of higher education with complex mixes of universities, polytechnics, regional colleges and vocational training institutions. The regional role has sometimes served to differentiate among the various types of institutions. In Finland and Portugal, for example, universities are considered to have a stronger national and international role, while polytechnics are assumed to focus on their regional role (OECD, 2008, forthcoming). In Switzerland, universities of applied sciences have been assigned a regional role.

The distribution of institutions is not necessarily structured to meet the challenge of balanced regional development in a highly competitive global economy. So while disadvantaged regions may possess locally orientated HEIs such as polytechnics in Finland, community colleges in Canada or universities for applied sciences in the Netherlands, these are often more geared towards upgrading the existing industry and less equipped to build a new knowledge-based economy.

The expansion of public investment in research in science and technology inside and outside of HEIs has likewise had an impact on the issue of regional engagement. This expansion has largely been driven by ministries of science and technology and in many cases has taken place in public research laboratories outside higher education, characteristically in the hinterlands of capital cities. At the same time HEIs were able to compete for research funding from research councils operating at arm’s length from government. In these councils the academic community had a major influence via peer review in a way that preserved the autonomy of their institutions and their distance from the state. This peer review process has often reinforced the position of the longest
established institutions, typically in core cities, thereby reinforcing regional disparities.

During the 1990s, this model for the organisation of public research began to break down as governments began to demand a more immediate economic return for investment in the science base. A key challenge has been to remove barriers and bottlenecks between scientific research and industrial innovation. The institutional division of labour which implied that research was carried out in isolation from the context of application was perceived as a problem when science policy was morphing into innovation policy. In this process, HEIs as institutions, as well as the individual academics who work within them, have been expected to become more active players in the so-called “triple helix” of government, business and higher education institution relations (Etzkowitz and Leydesdorff, 2000).

Industrial policy and science and technology policy have thus been converging towards a common innovation policy, which in some countries explicitly or implicitly embodies a strong territorial dimension. Research-intensive universities have been surrounded by science parks and a host of special purpose organisations established to support close co-operation with industry. In some instances these have served to buffer the institution from external pressures and, instead of facilitating links, these have operated as filters or merely served as display windows towards the universities’ political environment. But increasingly universities are expected to take the lead and to rearrange the structures so that entrepreneurship and technology transfer activities form part of the academic heartland of research and teaching. HEIs are now expected to contribute to economic development in four ways:

- creating new sectors and the spinning out businesses on the back of research;
- attracting to and retaining global businesses in the region through the availability of quality research links and the supply of well trained graduates;
- assisting with the diversification of established businesses in their production of new products and services;
- upgrading existing mature industry through assistance with incremental product/service and the improvement in industrial/business processes (Goldstein and Luger, 1993; Lester, 2005).

This science-driven model nevertheless overlooks many features of regional development to which HEIs directly and indirectly contribute. It neglects the contribution of broad-based teaching and learning to the enhancement of regional human capital. Service industries provide most regional jobs. The majority of graduates take up employment in financial, legal and other professional services or businesses. Some of such regionally-based business will be traded nationally and internationally and use the skills
of graduates to develop new “products”, some of which will also be provided to regional high-technology-based businesses. These businesses also require non-scientific graduates, for example with a business school background to assist in activities such as marketing. Other important non-manufacturing sectors recruiting graduates are the cultural industries and tourism which can serve to attract and retain creative people within the region, including those working in high technology businesses and HEIs themselves. Moreover HEIs are creators of, and venues for, cultural and social activity.

HEIs also make a considerable contribution to public services, particularly health and education; these services play a role in economic development not least as regions with wide internal social disparities are less likely to be attractive to leading-edge investors in the global knowledge economy. Finally, as environmental sustainability moves up the political agenda, it is becoming increasingly apparent that HEIs could have a key role to play through research, teaching and public education in building sustainable communities. All of these latter roles highlight the public service responsibility of HEIs as distinct from the more private focus of the science-driven model.

In summary and in terms of economic drivers, HEIs are seeking:

- local support for their global aspirations in research and student recruitment;
- increased student enrolments from the local population;
- additional income from services provided to local businesses through consultancy and professional training;
- indirect benefits of a local environment that can attract and retain creative academics and motivated students.

At a higher level, regional engagement is an outward and visible sign of the third or public service role of higher education and through which the institution can demonstrate its contribution to civil society. Through such endeavours, HEIs are able to provide concrete evidence of the value that higher education and research add to public investment in them.

**Synthesis: higher education institutions, tying down the global in the local**

Building on this analysis of drivers towards engagement, a multi-modal and multi-scalar engagement can be defined (Figure 1).

The right-hand side of Figure 1 summarises the three key dimensions to regional development, namely innovation, skills, and cultural and community cohesion including environmental sustainability. Just as successful regional development requires drawing together these strands, so the HEIs’ effective engagement with the region involves bringing together teaching, research and
service in a coherent manner and establishing effective mechanisms for bridging the boundary between the higher education institution and the region.

If the lens is widened to the national level, it becomes apparent that many of the drivers within higher education arise from different priorities within national governments. In many countries, ministries of education remain as custodians of the traditional logic of higher education, while ministries of science and technology espouse the logic of knowledge exploitation for business benefit and labour market ministries focus on the role of higher education in skills enhancement. Additional national drivers come from health and cultural ministries and from those parts of central government with oversight of local government and territorial development.

A final influence on relationships between a HEI and its region is the presence of global competition. The forces of globalisation and information and communications technology (ICT) are contributing to “the death of distance”. In principle, any place with an Internet connection can participate
in a knowledge-based global economy (Friedman, 2005). However, innovation continues to cluster in specific regions and the tendency for innovations to coalesce is becoming more pronounced (Florida, 2005; Asheim and Gertler, 2005). Increasingly, HEIs need to market their education and research services across the globe and provide the supporting infrastructure that will attract and retain the best researchers, teachers and academic leaders. At the same time, regions also need to attract knowledge-based inward investment, support local companies seeking to operate on the global stage, and attract the most creative people to the community and retain them.

Figure 1 also highlights the spillover effects (represented by open arrows) from the presence of an HEI in a region and the importance of physical places where interaction takes place, such as a science park, university hospital or cultural quarter. It is a complex diagram because the drivers for regional engagement are heralding in the emergence of HEIs undertaking a wide range of functions (modes), acting on a large number of stages (scales) – regional, national and international – and engaging with a vast array of stakeholders. The diagram would be further complicated if it took into account the presence of a range of institutions in a region, often by historical accident, which creates a further challenge of determining the appropriate division of labour between them.

Figure 1 is a stylised picture and implies no barriers to the effective operation of a higher education and regional development system. In practice there are many obstacles that need to be overcome. These will be considered in the next section of this paper.

**National policy barriers to regional engagement**

In most OECD countries, higher education policy does not include an explicit regional dimension. Ministries of education characteristically act as champions of the role of higher education and research in meeting national aspirations in terms of scientific excellence and advanced education of high quality for its own sake. One of the most notable exceptions is Korea where the New University for Regional Innovation (NURI) project has been funded by the central government to strengthen the capability of HEIs outside the Seoul metropolitan area.

The seemingly more mundane task of applied research and development (R&D) and meeting skill needs in the local labour market may be left to lower tiers in the education system, such as tertiary/community colleges. In some countries the boundaries between the levels of higher education have become blurred. Examples include the designation in 1992 of polytechnics in the United Kingdom as universities, the designation of selected colleges in the Netherlands as universities of professional education (now universities of
applied sciences) and the current pressure in Finland to re-label polytechnics as “universities of applied science”.

Characteristically, the newer institutions do not have a well established tradition in research or the infrastructure to support it, and they have to work hard with limited resources to build a national, let alone an international, profile traditionally associated with university status.

An important point to note in relation to regional engagement is that longer established HEIs have developed and grown in locations that broadly follow the national settlement hierarchy. These locations are quintessentially larger cities with the most prestigious institutions sited in or around the capital city. In contrast, the newer institutions, often with a specific remit to serve particular territories, tend to be more geographically dispersed.

To what extent has the process of rolling out higher education across national territories been part of conscious national policies to use higher education as an instrument in regional development? The answer depends on the definition of development and the extent to which this has been a task laid upon HEIs by their funders in central government. It is widely accepted that the challenge of raising competitiveness via research-led innovation is now at the heart of regional policy. However, it is clear that supporting excellent research in all regions has not been an objective of higher education policy. Even when engagement with business and the community has been recognised and laid upon HEIs as a “duty”, as in all the Nordic countries, it has been very much a “third task” and not explicitly linked to the core functions of research and teaching. In most instances, this task is not specifically funded or linked to regional development.

Turning to science and technology policy, there are growing pressures to ensure that public investment in this area has an economic impact. Consequently, research policy and other policies designed to support business innovation are increasingly converging.

Of the countries participating in the current OECD study, Finland probably has the most sophisticated national innovation policy composed of three pillars of business, universities and government. Even so, the Finnish national innovation system, overseen by the Ministries of Industry and Education, does not have a regional dimension. It has been left to the Ministry of the Interior with infinitely smaller resources to intervene in this domain. It has done this through establishing a regional network of Centres of Expertise characteristically linked to science parks, universities and polytechnics in different parts of the country (OECD, 2005).

Notwithstanding the growing recognition of the importance of organisational and social barriers to innovation, most top-down science and innovation policies continue to focus on high-technology and manufacturing
industry and neglect the contribution of the arts, humanities and social sciences to new ways of working and servicing the creative industries. Recent decades have witnessed the birth of the centres of science research excellence, which have sprung up throughout the world with the focus on fashionable high-technology fields such as biotechnology, nanotechnology and ICT. It is, however, becoming apparent that much innovation is neither science-based nor radical, but incremental in nature and taking place in SMEs.

National innovation policy driven by ministries of science and technology also does not, as a rule, pay regard to the role of teaching and learning in knowledge transfer from the research base. Work-based learning schemes, which usually involve regional links between employers and HEIs, are designed to enhance graduate employability and not as specific tools to improve regional business competitiveness. A notable exception in this regard is the United Kingdom’s Knowledge Transfer Partnership scheme under which postgraduates undertake projects in companies which are usually local. However, this is not explicitly a regional scheme.

While most OECD countries have active national labour market policies led by the ministries of labour or their equivalent, the focus is chiefly on intermediate and lower level skills and the unemployed, not those associated with higher education. At this level it is assumed that the market (i.e. demands from students and employers) will work effectively without intervention. National employer-led associations for particular professions (e.g. lawyers, architects, civil engineers) often play a key role in regulating supply and maintaining quality. Only in areas where the state remains a major provider of public services, most notably health, does the government undertake a planning role. While the market for intermediate and lower level skills may be local and therefore require a strong spatial dimension, it is assumed that the market for high level skills is national and international. There is therefore not a case for intervention at the intermediate or regional level.

For these reasons there appears to be little engagement by research-intensive universities in the development of human capital at the regional level, particularly as it relates to the skills required by knowledge-intensive businesses growing on the back of links with the research base. In contrast, newer and vocationally-oriented institutions are usually committed to upgrading skills in the established industrial base.

The cultural domain is another area where the role of HEIs in contributing to city and regional development is not widely acknowledged in national policy. HEIs are often owners or custodians of cultural assets displayed in their own museums and galleries. Their music, arts and drama departments directly and indirectly contribute to the vibrancy of their cities through performance and related activities. In some counties support for the arts and heritage does have...
a regional dimension and embrace higher education, but this is an exception rather than a general rule. Increasingly, HEIs are finding it difficult to support such activities out of their core teaching and research budgets and are seeking support from regional sources to maintain expensive facilities and activities (OECD, 2001). At the same time, the fast growth of the creative industries is shifting the focus to new enterprise formation by graduates of creative arts, design and media.

**Funding barriers to regional engagement**

All of the areas of national policy that may impact the regional engagement of HEIs have public funding streams associated with them. In the case of support for research, funding regimes are often geographically neutral or work against goals of balanced regional development. In unitary countries with a centralised higher education system, the capital city and some big metropolitan areas generally have the largest universities and a considerable share of HEI research. Many countries are concentrating their research capacity to create world-class centres of excellence. For example in the United Kingdom the system for determining research funding on the basis of peer review of academic research output results in over one-third of the resources for research in HEIs being allocated to four institutions in London and the South East of England. Indeed, the UK government’s research policy to fund the best, wherever it occurs, contributes to the ambition of maintaining a leading position in the global league table of universities – geographical concentration is simply an incidental consequence of this policy. While this concentration of funds applies to many unitary countries in Europe, there are exceptions. In countries like the Netherlands and Sweden a more balanced distribution of university research funding has been reached. In Spain, decentralisation has widened the distribution of resources but the dominance of Madrid remains.

Allocation systems for research that favour central regions may impose a particular limitation on less advanced regions. In many countries, smaller/newer HEIs in less developed regions simply lack the infrastructure to contribute to the development of a new economic base or renew old and declining ones. In peripheral regions, HEIs are well placed to shape the regional agenda in the absence of other research institutions (e.g. public laboratories, businesses with strong R&D departments), but the low absorption capacity of local and regional firms can limit the development of research for local needs.

The nature of project funding also places constraints on greater engagement. In Finland, where external funding of universities witnessed a rapid growth in the 1990s, the bodies providing funds – ministries, communities, private business, foundations and international organisations such as the European Union – only finance direct project costs, i.e. marginal cost. When
core funding is linked to teaching via graduate output numbers, there is not enough leeway to invest in translational research facilities and knowledge transfer supporting regional and national innovation systems. In some instances, this gap has been partially filled by municipalities and city councils (OECD, 2005).

Public funding for teaching in most countries relates to agreed numbers of students or graduates, usually in specified discipline areas linked to student demand and/or national need (e.g. IT and Medicine). Limited regard is paid to where graduates are finally employed geographically. In terms of student recruitment, federal funding is available for example in the United States to recruit able students from disadvantaged backgrounds. In the United Kingdom, there is national encouragement for recruitment of students from disadvantaged backgrounds which may have an implicit local dimension to it (AimHigher). This is, however, an incidental consequence of aspirations to raise participation in higher education in recognition of the fact that students from disadvantaged backgrounds often need greater academic support, since the school system has not prepared them as well as others. Australia has recently added a regional dimension to student recruitment policies. Allocations to institutions under the Australian Higher Education Equity Support Program (launched in 2005) are driven by enrolments, retention and success of students from low socio-economic status, with a weighting to the students from rural and isolated backgrounds. In general, however, there is limited evidence that recruitment incentives targeted at disadvantaged groups form part of national support for regional human capital development strategies, which enable local students to progress into higher education and then into local employment. In some countries barriers to progression between further and higher education arise from the lack of transferability of pre-entry qualifications and different funding and regulatory regimes under which the two levels operate.

Regional engagement is generally not directly funded by national governments. Some have embarked on large regional projects involving a wide spectrum of stakeholders designed to lay the foundations of regional innovation systems such as the NURI project in Korea or the Regional Growth Programme VINNVÄXT in Sweden. However, in most cases, governments have developed temporary incentives under the form of grants, call for projects or joint programmes to facilitate collaborative research at regional level but have seldom incorporated these schemes into sustained funding streams.

In England, the Higher Education Innovation Fund (HEIF) (and its predecessor, Higher Education Reachout to Business and the Community), which is supported by the Higher Education Funding Council for England, finances a number of business-friendly schemes for universities, but it only provides a few percentage points of the total resources of HEIs. HEIF is not explicitly a regional fund even though many of the initiatives it supports are
regional in character. Like funding for teaching, HEIF is now mainstreamed with a formulaic component based on past performance. This inevitably rewards the already successful institutions; moreover there is no attempt to weight the formula according to regional needs. In other words HEIs facing more adverse innovative environments receive no more than institutions in more dynamic regions.

Because national higher education and innovation policies have generally not provided the necessary resources to underpin regional engagement, it is hardly surprising that HEIs in parts of the European Union (EU) have seized the opportunity provided by European Structural Funds to initiate a host of projects to support their contribution to regional development. The self-evaluation reports document numerous EU-funded projects to support knowledge transfer and skills development in less favoured regions. Where these projects have not been embedded into mainstream research and teaching programmes, there is danger of the schemes foundering as these funds wind down.7

Mainstreaming funding for third strand activities is not without its problems. While the output from investment in research can be measured in terms of publications and from teaching in terms of numbers of students graduating, the appropriate metrics in the regional domain are far from clear. Many countries, for example Australia, the Netherlands and the Nordic countries, are in the process of identifying appropriate indicators to underpin funding allocation. This is proving a challenging task.8 A problem with most indicators is that they are essentially retrospectively rewarding past performance rather than development work that may lead to future income or services in the public interest and where the outputs are not necessarily reflected in the bottom line of university accounts. Indeed, the benefits of the regional public service role of HEIs are likely to accrue in the performance indicators of explicitly regional public agencies such as local authorities, where they take the form of measures such as job generation. This is not a benchmark against which HEIs would expect to be judged.

**Barriers in regional structures and governance**

Although many regions across the OECD are looking to HEIs to contribute to their economic, social, cultural and environmental development, the capacity of the regions to “reach into” higher education is often constrained by a wide range of factors. At the most general level, the public governance of territory operates within closed boundaries. Local and regional governments are responsible for administratively defined areas, and these are usually linked to unambiguous political mandates. By contrast, research-intensive universities cannot have a mandatory geographical sphere of influence; indeed such institutions operate at the local, regional, national and international
scales. Some lower tier HEIs do have a specific regional mandate, but it is increasingly less likely to be enforced by national, regional and local governments as the institutions compete for students and contracts wherever these can be obtained. So the delimitation of its “region” is a challenge for many HEIs.

Local government in many OECD countries is highly fragmented with individual municipalities having limited powers and resources to engage in economic development generally, let alone with higher education. In some countries, municipalities pool resources across several units and/or establish joint development agencies that have a capacity to work with the HEIs in the combined area. At the next level of aggregation (or disaggregation of the national governance system), some countries have politically powerful regional authorities with a specific mandate to support higher education in their region. This is the case in the Spanish autonomous regions like Valencia and the Provinces of Canada. In the United Kingdom, a highly centralised country, the national government has devolved some powers to the countries of Scotland and Wales, including aspects of higher education. Within England, special Development Agencies in each of the ten regions have been established by the central government. These agencies have some autonomy and are increasingly seeking to mobilise HEIs in support of economic development even though higher education remains a central function.

In attempting to engage with some level of government between the national and local and even when there is a specific regional administrative structure in place, HEIs often face challenges of intra-regional competition for their attention. Relating to the specific municipality in which they are located is one thing; serving a multitude of locations across the broader region with several centres of population is another. Multi-campus solutions raise questions of dilution of resources and partnerships between several HEIs across a region can be very demanding of senior management’s time and energy.

Finally, identifying who speaks for the private sector in relation to what higher education has to offer can be challenging, especially in regions without a strong private sector R&D base. Strong and dynamic regions have often well developed private sector networks that are plugged into higher education and articulated through Chambers of Commerce. But in weaker regions the SME sector is often inchoate, and there are not well developed industrial clusters. In such regions, branches of national and international companies can lack the autonomy to engage with higher education for the development of new products and services and to provide placements for students and jobs for graduates.

In summary, the environment for higher education to engage in regional development across OECD countries is highly variable. Where the governance and business structure is poorly developed and where regional leadership is
not strong, it is often necessary for HEIs to not simply respond to regional needs but to set the development agenda. Whether the HEIs are able to do this depends on their own governance, leadership and management.

**Barriers in the governance, leadership and management of HEIs**

Regional engagement is a challenge for HEIs, particularly for longer established institutions organised around academic disciplines and along a supply-driven agenda. The framework set out earlier in the paper highlights the transversal mechanisms for managing teaching and research, and their integration with one another. Most HEIs recognise the importance of teaching quality and research excellence and link these qualities to the cross-cutting roles of vice rectors (as distinct from the disciplinary roles of deans and heads of department). However, the integration of teaching and research within the disciplines to deliver regional impact is seldom recognised.

The all-embracing nature of regional engagement implies that this is a task for the head of the HEI. He/she can integrate the function and disciplinary areas and represent the corporate view of the institution externally. In many cities and regions, rectors and vice chancellors are key members of local elites, participating in many forums. At the same time, individual academics or other staff members may be active as business or social entrepreneurs in projects supported by the city and region. But in many instances there is little connection between the high level engagement of the senior management and the actions of individual academics. Indeed, the customs and practices of the institution may act as a barrier to more systematic engagement across the institution.

There are numerous institutional barriers particularly within research-intensive universities. First and foremost is the lack of incentive to individuals. Few institutions recognise regional engagement as one of the grounds for academic promotion; this is characteristically based around research excellence as reflected in peer reviewed publications with an occasional nod towards innovative teaching or academic management.

Second, resources to support the development of ideas (proof of concept) into products, services or public policies are often not available, let alone translational research facilities to build prototypes or test drugs.

Third, intellectual property can also be a major source of conflict between the academic and his/her institution, even where the national legislative environment is favourable.

Fourth, continuing professional development for small businesses and the community does not easily fit into conventional full-time teaching programmes and can require evening and weekend teaching, eating into time for research and scholarship. Finally, problem-solving research and development for
local SMEs (who may have difficulty in formulating their needs) can be time consuming and diversionary from what are regarded as core activities.

To what extent are these barriers to institutional mobilisation, in support of regional development, a function of traditional forms of institutional governance, and to what extent are they a matter of the underfunding of the third task? The evidence from the OECD countries suggests that it is a combination of both factors.

Enhancing the development of more entrepreneurial universities is becoming an objective of new higher education policies in many countries (Clark, 1998). Some OECD member states, for example Austria, Denmark, the Netherlands and the United Kingdom, which have embraced New Public Management principles, have replaced collegial forms of governance and management (i.e. elected rectors, deans and heads of departments) by a system of stronger and more overt managerial roles by appointed vice chancellors or rectors and heads of faculties. However while it is recognised that more leeway needs to be granted to higher education managers, reducing the burden of regulation does not necessarily proceed at a fast pace. Governments which have legislated to reform institutional governance and management are often not in a position to cede full autonomy to institutions until the changes are bedded down.

In many OECD countries, HEIs still have limited autonomy (in contrast to the autonomy of the academic staff) in terms of their mission, academic profile, programme offer, and management of human resources and infrastructure. The ability of the HEI to exercise control over its estate can be a key asset in supporting engagement with city and regional development but, as this is a significant financial resource, responsibility is often retained by the central government.

Where governance of universities has not been changed, the national government has often looked to new institutions, notably polytechnics, to address the regional development task. Such institutions characteristically are strongly managed. The internal mechanisms which mobilise the institutions to support the region are well tuned using a variety of performance measures. However, these institutions characteristically lack a strong research base capable of transforming a regional economy as distinct from improving the existing industrial base. In these instances, delivering the higher education capacity that has both global reach and local engagement may require strong collaboration with research-intensive universities – a further challenge for the leadership.

Reference to the entrepreneurial approach is not to imply that this is the appropriate model to ensure all HEIs actively engage in regional development. An institution with greater freedom of action may well pursue the achievement
of international status rather than local utility. The challenge for academic leaders is to manage the tensions arising from the different rationalities embedded within higher education and engagement with the needs of business and the community. The key task of the leadership is to produce a synthesis through which the institution not only responds to regional needs but also becomes a motor for regional development and which has its mainspring in a strongly independent academic heartland.

Building capacity for co-operation between higher education and regions

Underlying the OECD review has been the assumption that interactions between HEIs and the region in which they are located can be beneficial to both parties. For this interaction to take place, bridges have to be constructed based on firm pillars on both sides. This section of the paper seeks to identify what is required in terms of building capacity for joint working between regional actors and agencies and higher education in the round, not just particular institutions or parts of institutions. These are the building blocks for the pillars and the spanning techniques for bridging the gap to enable the traffic to flow from one side to the other. In regions where there is more than one HEI and a number of sub-regions, this implies developing the capacity of the region as a whole.

In the case of the institutional pillar, the importance of strong leadership cannot be emphasised enough. This embraces issues of strategic direction and operational management of the institutions. Countries wishing to see the significant shifts of culture and direction that entrepreneurial activity and regional engagement requires will need to consider the legal and regulatory changes necessary to enable strong leadership of HEIs to emerge. This involves strengthening the autonomy of HEIs by increasing the responsibility over the curriculum and the use of human and financial resources. It may extend to changes in the ownership of real estate and to other capital investment that underpins capable leadership and the institution’s ability to invest in placemaking.

This observation is directed to national governments that set the legal and regulatory framework, and relates to all matters to do with HEI’s business investment, fund management, and the exploitation and ownership of research and its outcomes. It is also the responsibility of the leadership of the HEI, however, to influence the policy environment, lobbying at all levels of government to secure good governance conditions, to give appropriate rewards and incentives, and to enable the implementation of regional development and engagement policies.
What practical steps can be taken to ensure that leaders have the necessary skills to undertake these challenging boundary spanning tasks? The European Universities Association and the OECD have long recognised the need for leadership development, and more recently programmes for senior management in higher education are being established in several OECD countries. For example the Higher Education Funding Council for England has established the Leadership Foundation which is attempting inter alia to deliver a programme relevant to leadership in regional engagement. New post-graduate and executive programmes on the business school model are making an appearance. In addition to the soft skills of leadership, such programmes need to focus on the generic issues regarding regional development and engagement and the facts regarding their own region (such as powers and responsibilities of external actors and agencies, and the dynamics of the regional economy).

Some of the knowledge and expertise necessary to advise leaders may reside in their own institutions. In the OECD study on which this paper is based, several self-evaluation reports include contributions from research groups within the HEI specialising in different aspects of regional engagement and/or higher education/management. While many of these groups are actively involved in providing advice to regional agencies, they are not always used by the academic leadership to guide institution wide policy and practice in this domain.

For managing its regional interface, the HEI may need to establish a regional office as has been done at Newcastle University in the North East of England case study. This is helpful when scaling up the institutional capacity from individual good practice cases to a well developed system. A systematic approach requires:

- co-ordinating and managing regional links;
- providing input to strategic planning;
- contributing to the marketing of the institution;
- developing frameworks for engagement and regional understanding within the institution;
- maintaining pressure for mainstreaming of regional engagement through the institution’s normal channels (OECD, 1999).

HEIs wishing to mobilise their staff in support of this agenda need to ensure that it is taken into consideration in the recruitment, hiring and reward systems. Leadership requires underpinning with tangible rewards and incentives that make it possible to change behaviour and, ultimately, attitudes and values. Employment and human resources management practices may have to change, markedly, to allow greater segregation of roles among academic staff, with
different kinds of workloads and reward systems, so that the HEI can perform
across all areas to a high level.

The internal division of tasks within the institution suggests that not all
staff/units should be doing everything. The same strictures will apply in
relation to the set of HEIs present in a particular region. While vice chancellors
and rectors can have the authority to determine such issues within their own
institution, the same does not apply between institutions. The needs arising
from the local industry may require HEIs to collaborate more closely together.
This may best be achieved by establishing a joint industrial liaison office to
undertake a matchmaking, co-ordination and quality assurance role and
provide a visible and single access point along the lines of the North East of
England’s Knowledge House. A number of regions have made tentative steps
to address the challenge of closer co-operation by establishing regional
associations of HEIs like Universities for the North East (Unis4NE) which
embraces five HEIs and inter alia oversees Knowledge House. A more recent
and even more ambitious association, insofar as it transcends national
boundaries, is the Øresund University bringing together HEIs in both Denmark
and Sweden.

Both of the above organisations have their own support staff funded by
subscriptions from the member HEIs and overheads charged on collaborative
projects. They have a valuable role in representing the HEIs collectively to
regional stakeholders. Nevertheless, they remain associations and their chief
executives are not empowered to commit individual institutions beyond the
collaborative operational projects to which they have collectively signed up.
Core areas of teaching and research where the institutions often compete are
“off limits”. Major investments in structural change such as new research
institutes, teaching programmes and property have to be dealt with directly
between the individual institutions and external stakeholders be they regional
or national. And this raises questions regarding the steering of higher education
systems.

In the more market-oriented Anglo-Saxon higher education systems,
there is an increasing tendency to expect HEIs to be entrepreneurial, create
partnerships and raise funds from many sources, especially the private sector
and industrial tuition fees. This may encourage them to work closely with
regional partners, possibly across all sectors, to diversify income streams. On
the other hand it may militate against regional engagement which does not
promise obvious profit. Pro bono public good may have little chance when
balancing the books is the principal imperative. Thus regional engagement
and development may stand in opposition to and be disadvantaged by the new
entrepreneurialism. However, by setting priorities and channelling public
funds, central governments can incentivise and persuade some or all HEIs to
make regional development an attractive part of their core business – for
example as a means of widening access to higher education or engaging with SMEs.

This market-orientated model is far from universal. In France and Germany academics are civil servants, weakening the influence of the HEI as a unified organisation. In the Nordic countries the social and cultural role of HEIs is not so important because these activities are unambiguously the role of other public institutions. In contrast, in Brazil, Mexico and Spain, the governance of HEIs has highlighted the social/political role reflecting a need to establish democratically controlled institutions following long periods of military rule.

A critical choice for governments and HEIs is where and how in a mass system diversification takes place. One option is to expect most institutions to undertake all forms of academic activity including research, teaching and community service. Another is to designate some as mainly teaching-only institutions and to concentrate research in a few “world-class” research-intensive institutions that enjoy much higher status. The choice between regional development and high research standing may be a false one, but it is often felt to be real and acute. Regions may want and benefit from the magnetic presence of an elite institution even if little local partnership occurs with such institutions. There is a shaky logic in arguing that a knowledge society needs high quality research flowing into R&D and exploitation, but at the same time saying that only the mainly teaching, non-research, universities have a specific mission to foster knowledge transfer. The outcomes of this programme are clear: research, teaching and regional development feed one another and need to go together in a virtuous development cycle.

The obvious solution to a dichotomy between world-class research and heavily engaged regionally-oriented institutions may lie in developing regional higher education systems in which there is strong interdependency, along with role specialisation. All institutions are then made responsible together for meeting agreed and required targets across research, teaching and community service roles. How this is done must be agreed between the players within the region. Open regional network systems did not emerge as an obvious trend in the regional cases, but they are a logical deduction from the needs, problems and pressures that were widely portrayed.

Regional systems might be tertiary and not only higher education. While the OECD programme revealed marked differences in the attitude of research-intensive universities to the wider tertiary sector, effective regional development, especially in terms of a labour market with fast-changing skill needs and mobile populations, requires a repertoire of youth and adult learning opportunities with functioning pathways and co-operation, not a disjointed set of provisions.

The notion of and the need for highly research-intensive world-class universities, whose key or only contribution to the region is their prestige and
world standing, came up time and again. Many countries are striving to create world-class centres of excellence through concentrating research capacity. In the global research context, building a world-class international centre of excellence is a difficult challenge for many countries let alone individual institutions. The bias towards cutting-edge science needs to take account of the evidence that most innovation is incremental in character and also relies on non-scientific knowledge such as design, marketing and tooling-up. A balance therefore needs to be achieved between supporting basic and applied research within each major region of a country.

In summary, HEIs do and should have different profiles and strengths, but all can and should contribute to the development of their societies and communities, both locally and regionally as well as nationally and internationally. The HEIs and the wider society will undoubtedly benefit from such involvement and partnership.

Successful partnerships between higher education and the region cannot be built on one pillar. They will also depend on regional leadership and collaboration. A key feature of the methodology of the OECD review was the establishment of a regional steering committee composed of HEIs and a wide range of regional stakeholders. In some regions this was already in place, for example Busan and Jutland-Funen, but often with a focus on one aspect of the development process, usually business innovation.

Populating and finding a chair for a new grouping can be problematic where the leadership in the public and private sector is weak. Higher education leaders are often confronted with a multiplicity of regional agencies and partnership structures requesting their input and specific outputs in return for time-limited funding. There can be tensions between different parts of the region, between different agencies and even within single agencies which have multiple objectives – for example in a local authority between town planners required to conserve historic buildings and those charged with encouraging new investment. The fragmentation of local government, the issues of who speaks for the private sector and the role of different parts of central government in the region are common issues.

One way of tackling these challenges is through the preparation of overarching regional development strategies which focus on regional strengths and opportunities and address weaknesses and threats and which highlight the role higher education can play. In several regions participating in this project such as the Atlantic Canada and the North East of England, research groups within the HEIs have played a key role in shaping strategies which embrace the contribution of higher education. Such strategies usually cover business,
people and places and highlight the contribution that higher education can make in each of these areas. Specific action lines typically include:

- knowledge creation through research and its exploitation (spin outs, intellectual property rights, business advisory service);
- knowledge transfer via teaching (worked-based learning, graduate recruitment, professional development/continuing education);
- cultural provision and campus development contributing to vibrant places that attract and retain creative people;
- social inclusion embracing different communities (urban, rural, ethnic);
- marketing the region nationally and internationally (via student recruitment, research links, alumni linkages, conference activity).

How are such programmes to be funded and the bridge between HEIs and their region put in place? One possible solution would be to create a single pot of public funding contributed to by a range of stakeholders which HEIs could draw on against an agreed set of deliverables which are regularly monitored. Not all HEIs in the region would be expected to do everything. Rather they could select from a portfolio of programme possibilities to suit their own missions and academic profile. In many instances programmes are, however, likely to transcend several institutions and modes of engagement (teaching as well as research) and may require establishing special purpose vehicles to ensure delivery. Such local actions may persuade national ministries of education who have laid external engagement duties on HEIs without appropriate support to enter into match funding arrangements.

Working in partnership for regional development is a dynamic process which will alter all of the parties. Success requires:

- both sides to have a sense that partnership is in their own organisational interest;
- capacity to commit to specific short-term decisions with a clear product and delivery date and sustainability;
- institutional memory supported by a modern knowledge management system that transcends changes of personnel and policy orientation;
- formal arrangements for evaluation and programme enhancement.

HEI benefits should be measurable in terms of new sources of students, improved teaching and graduate outcomes, more resources for valued and well used research, and higher regard and greater satisfaction derived from community regional relationships. Such success will change the HEI’s notion and mix of research, strengthening its “mode two knowledge production”, and will alter the nature of its teaching, student relationships and even student clientele. For a local or regional authority, long-term partnership means
change in the way its administration works, exposing it to transparency and participatory action.

One of the challenges of partnership is that of accountability and metrics. Each of the partners in the higher education/regional development nexus will have different accountabilities and expectations. Job generation and placemaking is not a responsibility of higher education, nor is higher education a responsibility of local government and, only in certain countries, of regional government. Impacts of engagement are difficult to measure. It is virtually impossible ex post to determine how much any improvement in regional economic performance or reduction of inequalities is due solely to interventions by HEIs working in partnership with regional agencies. But notwithstanding the difficulties in measuring impacts, there is a need to invest in a rigorous machinery to undertake baseline analyses followed by regular monitoring of outcomes. This process will require external peer review. It will require input from all of the stakeholders to ensure their individual accountabilities are taken care of in the analyses.

**Conclusion: realising the potential of higher education to contribute to regional development**

The preceding discussion has implicitly accepted a network model for moving towards higher education and regional development systems. It has not advocated a centralised steering approach whereby the national government directs individual HEIs to undertake particular tasks in specific locations. Nor for reasons partly related to the problem of appropriate metrics has a market-driven model based on performance or output measures been proposed. Rather the emphasis has been on a bottom up approach of collaborative working where all the partners appreciate the mutual benefits of coming together. Insofar as steering occurs, the approach favoured has been of peer learning through sharing of good practice.

To succeed, such regional collaboration needs a national framework consistent between the domains of higher education and territorial development which facilitates or permits conjoint action at the sub-national level. There is some evidence from the case study regions that national governments are moving away from strictly prescribing tasks for regional or local governments and what HEIs should do where. Movement towards greater direct participation of citizens and businesses in the affairs of state locally and nationally and in the co-production of knowledge are reinforcing these tendencies and, in the process, helping to build bridges between regional institutions and HEIs. While the extent of local and regional empowerment and the extent to which it embraces higher education varies significantly from country to country, without this empowerment it is difficult to see how the potential for HEIs to actively
contribute to regional development can be realised. With the right conditions, regional engagement can become a crucible within which more dynamic and open HEIs can be forged, both responding to and shaping developments in the wider society.

Acknowledgements

This paper draws heavily on the report *Higher Education and Regions: Globally Competitive, Locally Engaged* (OECD, 2007). The contributors to that report were the authors, Patrick Dubarle (OECD), Chris Duke (RMIT) and Paul Benneworth (Newcastle University).

The authors:
John Goddard
Pro-Vice-Chancellor
Newcastle University
6 Kensington Terrace
Newcastle upon Tyne NE1 7RU
United Kingdom
E-mail: john.goddard@ncl.ac.uk
Jaana Puukka
Analyst
OECD/IMHE
2 rue André Pascal
75116 Paris
France
E-mail: jaana.puukka@oecd.org

Notes

1. The findings of the project are now published under the title *Higher Education and Regions: Globally Competitive, Locally Engaged* (OECD, 2007). This paper summarises the key conclusions from this report.

2. The granting of land to establish a Land Grant university in every state was achieved through Morill (Land Grant) Act 1862.

3. In this respect the United Kingdom with Oxford and Cambridge and the United States with Harvard and MIT are exceptions.

4. Countries which have implemented performance-based allocation mechanisms use a wide range of indicators. Indicators associated with study completion include student graduation/completion rates, number of credits accumulated by students, average study duration, ration of graduates to beginners or number of degrees awarded. Other indicators focus on the labour market outcomes of students: employment rates of graduates or extent to which employment is in a field related to the area of studies or student performance in professional examinations. Some
countries use stakeholders’ views (e.g. employers, students, government, social partners) of programmes; effectiveness, including assessments of the quality of graduates and of the extent to which a range of needs are being met; and a degree of student satisfaction.

5. Aimhigher is a national programme in England which aims to enhance the widening participation in higher education. It is run by the Higher Education Funding Council for England (HEFCE) with support from the Department for Education and Skills.

6. The recent change of name indicates a shift from a broader to narrower definition of the third task.

7. Exceptions in the current OECD review (OECD, 2007) include some of the master’s degree programmes which have been established with the help of the European funding and have now been mainstreamed in the higher education institutions. This is the case for example in the Faculty of Information Sciences of the University of Jyvaskyla in Central Finland which launched a number of master’s programmes in the 1990s to combat the recession and to build up the knowledge-based economy.

8. In England, HEFCE has established a Higher Education and Business and Community Interaction Survey covering a large number of indicators but in the end the Council decided to use gross institutional income measures to determine allocations under its HEIF scheme.

9. According to Burton Clark, “entrepreneurial” universities are seen to be able to determine their own destinies within a government regulated system. “Expanded developmental periphery, strengthened management core and independent academic heartland” belong to the key characteristics of such institutions.

10. The Peer Review of Jutland-Funen in Denmark notes that “while the new governance system has been put in place enhancing the development of more entrepreneurial universities ... the government at the same time continued to practise strong control over them. Matters such as the launch of the new study programmes, course assessment, setting up activities abroad, ownership of buildings and human resource development are controlled by the ministry”.

11. These research groups include the Centre for Higher Education Policy Studies at Twente University (Netherlands), the Centre for Urban and Regional Development Studies at Newcastle University (North East of England, United Kingdom), the Leslie Harris Centre of Regional Policy and Development at Memorial University (Newfoundland, Atlantic Canada), the Institute for Sustainability Health and Regional Engagement at the University of the Sunshine Coast (Queensland, Australia), and the Centre for Higher Education Research (Valencia, Spain).

References


Globalisation is profoundly changing economic development, forcing development officials to adopt a regional approach founded on what a particular region does best or its competitive advantage. Globalisation has also placed a new premium on innovation as the critical fuel to economic success – for firms, regions and countries. Universities lie at the nexus of these two powerful trends: they are rooted in regions, and they are perhaps the most important engines of innovation. Drawing on recent experience in the United States, this paper explores this nexus by addressing three critical questions: 1) Why is regional competitiveness the new paradigm for regional development? 2) What must regions do to compete? 3) What can be done to connect university innovation with regional development? The paper concludes that new mechanisms are needed to connect university innovation with regional development. Public policy can encourage these mechanisms by addressing twin needs in the newly forming “market” for regional innovation: encouraging universities to make innovation available in ways that regions can easily tap, and helping regions understand which innovations are most critical to their economic future.
Globalisation has prompted enormous interest around the world in two seemingly dissimilar topics: universities as engines of innovation and regions as engines of economic growth. By creating ever stiffer competition for old products, globalisation puts a new premium on new products. Innovation is the process of discovering these products, and universities are powerful engines of the discovery process. Meanwhile, globalisation has also had profound economic impacts, but the effects increasingly settle on functional regions below the national scale. These regions have essentially become the athletes in the global economic race.

While both of these trends are important in their own right, the time has come to bring them together with as much synergy as possible. Simply stated, innovation is critical to the success of regions as they compete in the global economy. But regions are the crucible in which innovation is most likely to play out in the economy. Thus, a critical goal is bringing together two powerful results of globalisation in ways that may not first seem apparent. The challenge is to discover the most powerful ways to align the two trends so that universities can be critical agents in regional development in the 21st century.

Three questions help to frame how best to merge these two separate topics:
- Why is regional competitiveness the new paradigm for regional development?
- What must regions do to compete?
- What can be done to connect university innovation with regional development?

This article shows that new mechanisms will likely be needed to connect university innovation with regional development. These mechanisms can be encouraged through public policy by thinking of innovation as a regional market that is currently failing. Concrete steps can be taken to fix this market failure.

**Why is regional competitiveness the new development paradigm?**

Globalisation has dramatically redrawn the economic landscape. The biggest impact has been to delineate sharp differences in economic performance along regional lines. In many cases, these lines fall not along traditionally political boundaries, but rather along the more practical lines drawn by
functional economic regions. They arise due to commuter-sheds, shopping patterns, or unique cultural or topographical features.

One sign of the regional character of globalisation is the growing recognition that the variation in regional economic performance is now much wider than the variation across countries. Recent analysis shows, for instance, that job growth in 27 OECD countries ranged from a low of −2.2% a year (Poland) to a high of 4.0% a year (Spain) (Figure 1). The range across regions was much wider, however, in nearly all countries. In the United States, for example, the range was 10 percentage points (−4.0% to 6.0%) (Figure 2).

What is more, regions are increasingly becoming the drivers of national economic performance, not the other way around. The same OECD report also shows that more than half of all new jobs in OECD countries were created in just 10% of regions. In the United States, the percentage is fully 67%. This means that policies that shape growth at the regional level have big implications for the national economy.

Figure 1. From 1998 to 2003 employment growth varied significantly among OECD countries
Average annual growth rate in national employment, 1998-2003

What must regions do to compete?

Many economists now view a regional competitiveness framework as the key to regional development in the 21st century. Drawing on the work of Porter and others, the regional competitiveness approach essentially argues that regions can develop only by identifying their distinct competitive advantage, and they must align public investments with those key economic niches (Porter, 1998, 1999). Regions need four essential ingredients to gain competitive niches in the global economy: strategy, governance, innovation and entrepreneurship. These four form a self-reinforcing system aimed at producing a region’s prosperity (Figure 3). The strategy serves to identify the region’s distinct competitive advantage and align public and private actions necessary to seize it. The governance supplies a framework to unite public, private, and nonprofit leaders as a collective guide and owner of the strategy. The innovation element links the region with new ideas and technologies that can transform the region’s economic assets. And the entrepreneurship element provides a fertile climate in which new ideas can be taken successfully to the marketplace.
Regional strategy

With regional competitiveness as the overall frame for economic development today, a regional strategy is the cornerstone for sound public policy and effective local action. Regions face two main challenges in crafting a strategy. The first is the general lack of skills and tools to identify their competitive advantage. In many cases, regional leaders have only mounted business recruitment campaigns. Mapping assets and identifying competitive advantage is a much more complex task. Thus, an important starting point is boosting the capacity of regional leaders to undertake the task in the first place. While this identification has been a component of regional policy initiatives in some countries (Italy and the United Kingdom), it is rarely part of regional initiatives in the United States. As one sign of change, early discussion of the next US farm bill indicates that some groups are pushing to include this element as a core piece of the next rural development title.

The second challenge is a paucity of tools that provide analytical insights into a region’s competitive advantage. Cluster analysis is the principal tool today. While it provides helpful insights, it also has blind spots. For instance, a regional project in Western Alabama/Eastern Mississippi funded by the US Department of Labor conducted extensive cluster analysis as part of crafting its regional development plan. That analysis showed a large paper and pulp industry cluster, founded on the region’s extensive pine forest. But paper and pulp is only one potential use of that forest resource; its value for outdoor recreation might exceed that of paper. Cluster analysis, however, only sees the existing use, not other promising uses.

Once a region has a strategy, the analysis is not complete. The region must still prioritise its public investments in light of that strategy. That is, which public goods will most benefit the region’s strategy? Today, few tools are available to conduct such investment analysis. User-friendly tools that compare returns in terms of the region’s strategy are badly needed.

Notwithstanding recent efforts by policy officials and local practitioners, regions still need better tools to see the most promising economic directions.
Future innovations in regional policy, therefore, will likely have a common starting point – improving both the skill sets and the tools that regional leaders must have to craft sound regional development strategies.

**Regional governance**

Designing a regional strategy can only happen when there is an engaged group of stakeholders to own and drive the strategy. Experts increasingly refer to this leadership group as “regional governance” (OECD, 2005, 2006). Much remains to be learned about forming effective regional governance. Experience to date, however, suggests that it is the result of a catalyst “convening” organisation and broad engagement of leaders from public, private and nonprofit sectors (Sertich, 2007).

A critical outcome of regional governance is aligning initiative across these various sectors. Crafting and implementing a regional strategy places many demands on a region. Not only must the region simultaneously map its distinct assets and understand the markets it can exploit, but it must also align public investments with those by the private and nonprofit (often philanthropic) sectors. This alignment of investments across widely divergent stakeholders necessarily requires some roundtable where those interests combine with the long-term success of the region as a common benchmark.

While more and more regions understand the importance of regional governance, they often do not know how to build it. The problem is often twofold. The first problem is the lack of a trusted organisation to play “King Arthur” and provide the roundtable, or safe space, for region-wide discussions to occur. This appears to be a particularly difficult problem in many rural regions.

One solution is to consider how public policy might provide incentives for organisations to become “King Arthur”. Countries such as Italy and Mexico have provided federal incentives for communities to come together as a region. This approach appears to have had positive results overall (OECD, 2006; Barca, 2003).

The second problem is that many regions have weak social networks. Analysts are just beginning to adapt network theory to the issue of regional governance. This theory is a valuable framework for thinking about how work gets done in organisations (Cross and Parker, 2004). The same concepts may be extremely helpful in developing practical, hands-on ways to spur the formation of sustainable regional governance. With that in mind, new public programmes may be conceived with an eye toward developing user-friendly practices and guidelines to forge regional governance where it does not naturally emerge.
Regional innovation

Experts and policy officials both agree that most regions need to shift further and faster to knowledge-based economic engines. The problem for many regions is that they frequently lack connections to the sources of innovation, often universities, and they also lack the capacity to implement them once found. Public policy, therefore, will likely be exploring new mechanisms to create better links with universities and new practices to boost innovation capacity.

Public policy may explore new mechanisms that would more deliberately connect the pipeline of discovery at public universities with the regions that can best implement them. Purdue University’s Center for Regional Development is one such innovation along these lines. In principle, these mechanisms will catalog university discovery in a way that is searchable and accessible to regions on a quest for innovation that perfectly aligns with their new competitive advantage. Regions, for their part, will understand their innovation need so well that they will know the broad contours of the “right” innovation. This, of course, presumes that regions have the kind of strategies outlined above.

Policy may also give new attention to understanding and boosting the innovation capacity of regions. For some time, economists have assumed that innovation capacity is not evenly distributed across the landscape. Recent work by Barkley, Henry and Lee (2006) has shown that such capacity is strikingly uneven. Better indicators of the innovation landscape are certainly needed as an essential starting point. But policy will also need to emphasise the “therapeutic” aspect – what can be done to boost capacity in regions that start out with limited capacity. Little practical work has been done on the best solution to this problem.

Regional entrepreneurship

Regional innovation, and competitiveness for that matter, will mean little if regions cannot create a world-class entrepreneurial climate. This notion has received widespread attention over the past few years, and there are signs of innovation in policy and practice across the landscape. Examples include private-led initiatives, such as in the United States by the Nebraska Community Foundation’s efforts to spur grass roots engagement of business formation and the recycling of a region’s wealth (Nebraska Community Foundation, 2006). They also include public/private partnerships, such as the Entrepreneurial League System, now under trials in three regions across the United States (Lyons, 2004).

Looking forward, two issues are likely to receive significant attention in regional policy. The first is making a shift in many countries from small business support to a broader focus on entrepreneurship. In the United States, for instance, the Small Business Administration (SBA) was created in the Eisenhower administration and reflects a historical commitment to growing
small business. Most entrepreneurship experts, however, view the entrepreneurial process as requiring a much broader range of skills and supports than is traditionally envisioned by SBA and small business development centres. A national commission argued for a broad-based approach that would include financial markets, intellectual property, entrepreneurial skills and dependable infrastructure valued by entrepreneurs (National Commission on Entrepreneurship, 2002). The key is paying attention to the sum of the parts – and to unintended gaps or conflicts in the disparate programmes. This overview has been missing to date.

The other area for public attention will be equity capital. In the United States, public policy in the past has focused almost entirely on debt financing – and commercial banks, in particular – when it comes to entrepreneurship. In an entrepreneurial economy, however, equity capital takes on much bigger significance, since it is the fuel for new entrepreneurs. Mechanisms that help regions recycle their wealth in new businesses become especially important. While the number of such funds has grown, with community development venture funds a noted example, they remain relatively scattered across the country. Thus, federal and state incentives to encourage the formation of regional equity funds will likely remain a major issue going forward.

What can be done to connect university innovation and regional development?

A flurry of new university mechanisms suggests that universities are taking seriously the goal of spurring economic development. That said, by any reasonable standard, the economic impact of those initiatives rarely extends much beyond 100 km from campus. Technology parks, business incubators and streamlining the intellectual property process sum up most university efforts today – and the impacts of these typically fall close to campus.

As shown above, a growing body of work concludes that the principal economic development challenge lies at the level of a functional economic region. A case from the United States helps to illustrate the challenge in connecting universities with these functional regions. All 50 states have public universities and, indeed, have a land-grant university that was chartered with the aim of spurring economic gains throughout the state. Yet few regions have the advantage of being adjacent to the land grant or other universities.

Historically, the response to this problem was to create an “outreach” mission for land grant universities, and use the extension service principally to carry out this mission. When this US system was created in the early 20th century, agriculture was the ubiquitous driver of the rural economy. Thus agricultural experiment stations (the innovation “engine”) and a county-based extension service (the innovation “transmission”) were a logical answer to
land grant economic development. To this day, the extension service in many states is still housed in the college of agriculture. While such an arrangement worked well throughout much of the 20th century, the rural economy is simply too diverse today to be driven by an agro-centric approach linking university innovation to rural regions (Henderson and Weiler, 2004).

Put another way, regions need access to the specific innovation necessary to exploit their competitive advantage. In some regions, this is still agricultural innovation. But in most, it is not. Thus, a “one-size-fits-all” approach to “innovation delivery” simply does not allow rural regions to seize their full economic potential, especially when their niche lies in a knowledge-based sector far a field from agriculture.

One way to move forward to a better system of innovation delivery is to view innovation as a marketplace that lies at the heart of regional development. This “regional innovation market” provides a place for universities to supply innovation – making available the development benefits of the research the public has funded. It also provides a place for regions to find the innovation essential to growing the business clusters and exploit the distinct economic assets that together define the region’s competitive advantage.

When viewed this way, most observers would conclude that this market is failing today. That failure results from problems on both sides of the regional innovation market. Consider these problems:

- Universities are not organised to supply innovation in a form that regions can readily access. Research (the creation of innovation) is scattered across separate centres located in all colleges, distributed throughout the campus. Researchers have no incentive to connect their discoveries with regions, instead focusing on excellence among peers and attracting more research funds – highly rational responses given the incentives they face today. Finally, universities are often poorly acquainted with the development needs, or competitive advantages, of the regions in their state.

- Regions, for their part, rarely know what their future competitive advantage is, and thus usually do not know which innovations would most contribute to future growth. This is especially true in rural regions, where path dependency on past economic engines runs strong.

Thus, there is a gulf between the universities, which can supply the innovation, and the regions that need it (Figure 4). As noted in the previous section, universities have begun to build new bridges. However, in most cases, the bridges do not solve the failure of this regional innovation market. Many universities have formed multi-disciplinary research centres (Purdue’s Discovery Park is a good example). Research parks at the edge of campus are de rigueur. And streamlining intellectual property protocols is a consistent theme (Sonka and Chicoine, 2004).
The problem with all of these approaches is that they fall far short of connecting with regions, especially those not adjacent to campus. In most cases, the university home town is the principal beneficiary. In many cases, more distant regions understand this only too well, and thus take a skeptical view of investing additional public funds in research on campus.*

Solving this market failure will require new innovation bridges. In light of the market failure, there is strong case for public policy to intervene (Figure 5).

Specifically, three steps are necessary:

1. **The “ask” in this market must be clarified.** In every market, the ask serves as a clear signal of what buyers need and are prepared to purchase. In this case, ask describes the innovation that regions need to seize their competitive advantage. Regions must understand their competitive advantage more clearly and identify the innovation critical to their economic future. This will require much work on their part, including focusing more clearly on mapping their assets and building regional governance. But universities themselves could largely assist in this process. Universities often have regional economic expertise that could be helpful in diagnosing regional competitive advantage, but rarely is this put to work.

* The author once spoke to a meeting of more than 350 business leaders in a US mountain state. The purpose of the meeting was to identify ways to diversify the state’s economy away from natural resources. The state had a large “rainy day fund” that could have sustained a large new investment in innovation at the state’s land grant university. When one of the attendees proposed that very idea, it was shouted down by more than a score of detractors, all of whom argued that such an investment would only benefit the university’s home town. Based on the author’s experience, such skepticism is far from isolated.
2. **The “bid” must be defined.** Universities catalog their research today for funding and academic “excellence” purposes. Such a catalog does not necessarily align with development purposes, nor is it user-friendly to people outside the research community. Thus, a critical first step is to create new innovation catalogs that present innovation with the other half of the regional innovation market in mind. Few, if any, universities currently do this, although Purdue’s Center for Regional Development appears to have been created in this spirit.

3. **A mechanism for “clearing the market” must be created.** Markets work because they have a trusted space where buyers and sellers can meet, knowing that they will find a fair exchange. Today, there really is no clearing floor where the bid and ask in the regional innovation market get settled. What mechanisms might be created to do this? For the regional innovation market, the critical need is for information to be exchanged between the universities and the regions. This might be as simple as creating an electronic meeting place where universities can post their “catalog”, and regions can list their “innovation needs”. While the authors know of no such systems currently, in a web-based world, the cost of creating one would appear to be low relative to benefits to regional economic growth.

![Innovation Bridge](image_url)

**Figure 5. Innovation bridge**

Public universities have a special place in the areas in which they are located. They provide a source of pride in academic, cultural and athletic achievement. Historically, they have also been viewed as economic engines in those areas. Globalisation only underscores that role.
The problem is that universities are fundamentally organised around sectors and disciplines, while economic development has become a fundamentally regional undertaking. The challenge is finding the one or two strands of research on campus that most benefit the competitive advantage of a given region, which is often far-removed from campus.

This seems a simple problem to solve in an electronic world. However, the institutional mechanisms of universities are deeply embedded and change only slowly. For their part, many regions are just now awakening to the need to understand that they can only grow by exploiting their competitive advantage – and by linking to innovations that unlock it.

All of this amounts to a failure in the market for regional innovation. This market failure can be addressed through public policy. Such an approach would focus on helping regions identify their “ask”, encouraging universities to clearly describe their “bid” and providing an electronic market floor for the two to meet. The benefits of fixing this market would be great.

Public policy can play an important role in all three parts of this solution. First, it can provide support for helping regions define their competitive advantage. Such an approach is currently under consideration in the US farm bill. The proposed Rural Collaborative Investment Program would provide rural regions with federal funds to support the development of rigorous regional development strategies founded on a clearly identified competitive advantage.

Second, public policy can create new incentives for universities to connect campus research with regional development. The state of Kentucky is considering creating regional pools of funds that become available to the University of Kentucky only when certain “triggers” are met. The triggers define specific ways that campus research is developed by businesses in that particular region. Mechanisms like this could define new ways in which state governments try to make the economic development of the public universities much more concrete and framed around a regional approach.

Finally, public policy can support the creation of “market clearing mechanisms”. To be sure, these may best lie in the realm of the universities themselves. However, public funds might provide the incentive universities need to creatively tackle the problem.
The author:
Mark Drabenstott
Director and Research Professor
RUPRI Center for Regional Competitiveness
Truman School of Public Affairs
University of Missouri-Columbia
214 Middlebush Hall
Columbia, MO 65211
United States
E-mail: mark@rupri.org

Mark Drabenstott is Chairman of the OECD Territorial Development Policy Committee.

References
Sertich, J.M., Jr. (2007), Congressional testimony before Senate Committee on Agriculture, Nutrition, and Forestry, Hearing to examine development challenged and opportunities in rural areas, 13 February.
A World of Competitors: Assessing the US High-Tech Advantage and the Process of Globalisation

by

John Aubrey Douglass
University of California, Berkeley, United States

Research universities throughout the world are part of a larger effort by countries to bolster science and technological innovation and compete economically. The United States remains highly competitive as a source of high-tech innovation because of a number of market positions, many the results of long-term investments in institutions (such as research universities) and in research and development funding, and more broadly influenced by a political culture that has tended to support entrepreneurs and risk taking. In essence, the United States was the first mover in pursuing the nexus of science and economic policy. The following essay attempts to place universities within this larger political and policy environment by discussing market factors that have influenced knowledge accumulation and high-tech innovation in the United States. It also gives an assessment of their current saliency in the face of globalisation and the growing market position of competitors, such as the European Union. The article also provides observations on major US state-based high-tech initiatives intended to create or sustain knowledge-based economic areas, and discusses the prospect of a major new federal initiative to increase national research and development funding.  

1
New growth theory has become a ubiquitous part of the lexicon of international business, university leaders, and, perhaps most importantly, ministries and political leaders of almost all political persuasions. The shared axiom essentially states that postmodern economies, and increasingly developing economies, are growing in their dependence on “knowledge accumulation”. Promoting knowledge accumulation locally, via knowledge-based businesses and entrepreneurial universities working together and supported by government, leads to technical innovation, new products, robust local economies, and ultimately greater national productivity and global competitiveness.

In part, the growing political acceptance of the new growth theory relates to a number of highly touted regional success stories, what I call for the purposes of this paper knowledge-based economic areas (KBEAs). The United States, in particular, continues to be viewed as the most robust in creating KBEAs, providing in some form an influential model that is visited and revisited by business and government leaders, and some academics, who wish to replicate its wonders. But with significant efforts by regional and national governments to pursue the edicts of new growth theory, and to create KBEAs on their own political and cultural terms, one might ask what are the current advantages, and disadvantages, of the US model? Does the US retain a substantial global advantage, in part by being one of the first movers in creating vibrant KBEAs? With growing global competition in creating strong high-technology clusters in regional areas, what policy innovations are being pursued in the United States?

The status of the US high-tech advantage

One widely understood challenge is how to create the conditions and circumstances for knowledge-based economic areas that are not simply regionally or nationally competitive, but globally competitive. Universities, and the educational attainment of a population generally, play a critical role – perhaps as important as any other major policy and investment variable. Indeed, the first major US KBEAs focused on non-defense high-tech (HT) sectors – including the San Francisco Bay Area (including Silicon Valley), Boston, the Austin area in Texas and a number of others – that benefited from the presence of major and high-quality research universities. But there is obviously much more complexity underlying the factors required both to generate KBEAs, as well as the HT sector in general, and to sustain them.
The US remains highly competitive as a source of HT innovation because of a number of market positions, many the result of long-term investments in institutions (such as research universities) and research and development (R&D) funding, and more broadly influenced by a political culture that has tended to support entrepreneurs and risk-taking. In essence, the US was the first to understand and pursue the nexus of science and economic policy. The following narrative outlines a number of the market factors that have historically influenced knowledge accumulation and HT innovation in the United States, along with a brief assessment of their current saliency in the face of globalisation.

**Political interest and support for high tech – the mantra of the postmodern economy**

Among the general public, and most importantly among major political leaders in the United States, the tenets of new growth theory, as noted previously, are growing in influence. With declines in older manufacturing and consumer goods industries, high technology and service industries are widely viewed as the sources of near- and long-term economic competitiveness.

This worldview is, of course, shared by many other developed economies, such as the European Union. The difference is that the United States has had a longer history of essentially believing (rightly or wrongly) that HT innovation and economic activity will, in some form, be the crux of its future economy, and this belief influences R&D investment rates. There is, of course, abundant empirical evidence of the central importance of HT innovation, including highly productive regional economic areas such as Silicon Valley and the San Francisco Bay Area for information technology, San Diego in communications, and Boston for biotechnology. But there has also emerged a political rhetoric influenced by these success stories, including the desire to replicate in some form their seemingly universal formulas for success, and by an optimistic enthusiasm and sense of political competition that often drives policy making.

The major change in the United States, reflecting trends in other parts of the world, is the movement of policy making and public investment intended to promote HT innovation, and encourage university-business collaboration, to the regional (or state) and local level, with state governments increasingly becoming active; however, there are peculiarities to the dynamics of policy making in the United States. For one, the source of public R&D funding has been the federal (national) government historically. State- and local-based initiatives to build university-business collaborations two decades ago, for example, were in large part pursued to capture federal funds. This motivation remains, but increasingly states are simply investing their own money in basic research efforts in areas such as stem cells – an area that, for political reasons, the current Bush Administration has refused to fund via federal coffers.
Political interest, enthusiasm and the sense of political competition (to borrow the practices of competitor states or local regions, or to beat them to new policy initiatives) are in some form prerequisites to building KBEAs. Arguably, although with many nuances, the United States has a high political interest and desire to promote KBEAs and HT innovation, the same as anywhere in the world. At the same time, the United States has its own peculiar ironies in how science and technology are viewed. For example, less than half the US population accepts the theory of evolution. Whether and how the theory of evolution is taught in public schools remains one of the most contentious issues in science education. A recent US survey has not shown much change over time in the public’s level of knowledge about science.

At the same time, the most recent Eurobarometer does show an increase, with marginal change occurring in almost all countries surveyed, although there is considerable variation in science-knowledge across countries in Europe. Belgium, Germany, Ireland, Luxembourg and the Netherlands recorded double-digit increases between 1992 and 2005 in the percentage of correct responses to science literacy questions. These political and cultural factors hinder development of a more scientifically educated population and workforce, and ultimately the number of native-trained scientists and engineers.

**University and private sector interactive vibrancy – high-quality, elite higher education institutions and growing partnerships**

In the course of creating the world’s first mass higher education system, the United States built a large array of public and private universities that have found merit and success in interacting and supporting private enterprise and local economies. The public universities that emerged in the mid to late 1800s, in particular, had as part of their charters the responsibility of providing research and training in agricultural fields and emerging areas of industrial engineering that catered to local and regional needs. From their founding, the governing boards of these public institutions reflected these important components of their charge, with the majority of their members usually representing business and farming interests.

The result was a culture that promoted applied uses of scientific and engineering research that, by the early 1900s, became a major cultural component in most major US research universities, public and private, and particularly in engineering fields. In addition, federal funds, the initiatives of state and local governments, and the efforts of sectarian communities and private benefactors helped to create a vast array of public and private institutions that, essentially, supported the emergence of a cadre of high-quality research universities. One indicator of the concentration of high-quality research universities is the high ranking of US institutions in a variety of studies, including the highly publicised study based at Shanghai’s Jiao Tong University.
The idea of mass higher education to service, at least in part, the broad and ever-expanding needs of local and regional economies in the United States stood in sharp contrast to most other countries (such as most of Europe), and gave the United States a significant market advantage. The tradition of public-private partnerships and other cultural and legal factors (such as intellectual property laws) continue to significantly shape HT innovation in the United States. Foremost, there is a relatively strong building of alliances and flow of funding. Since 1993, R&D expenses paid to other domestic R&D performers outside their companies have increased as a proportion of company-funded research and development performed within firms. In 2003, companies in the United States reported USD 10.2 billion in R&D expenses paid to other domestic R&D performers outside their companies, compared with USD 183.3 billion in company-funded research and development performed within firms. The ratio of contracted-out research and development to in-house research and development was 5.6% for the aggregate of all industries in 2003, compared with 3.7% in 1993.

Table 1. Regional distribution of top world universities, Shanghai Ranking 2006

<table>
<thead>
<tr>
<th></th>
<th>Americas</th>
<th>Europe</th>
<th>Asia/Pacific</th>
<th>Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 10</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Top 50</td>
<td>39</td>
<td>9</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Top 100</td>
<td>57</td>
<td>35</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Top 500</td>
<td>198</td>
<td>205</td>
<td>93</td>
<td>4</td>
</tr>
</tbody>
</table>


Participation by federal laboratories in co-operative research and development agreements (CRADAs) increased in financial year (FY) 2003 but was still below the mid 1990s peak. Federal laboratories participated in a total of 2,936 CRADAs with industrial companies and other organisations in FY 2003, up 4.3% from a year earlier but still below the 3,500 peak in FY 1996. At the same time, US companies continue to partner with other US and international companies worldwide to develop and exploit new technologies. New industrial technology alliances worldwide reached an all-time peak in 2003 with 695 alliances, according to the Cooperative Agreements and Technology Indicators database. Alliances involving only US-owned companies have represented the largest share of alliances in most years since 1980, followed by alliances between US and European companies.

**Relatively high R&D investment rates – investment in basic research**

Absolute levels of R&D expenditures are important indicators of a country’s innovative capacity and are harbingers of future growth and productivity. Indeed,
investments in the R&D enterprise strengthen the technological base on which
economic prosperity increasingly depends worldwide. The relative strength of
a particular country’s current and future economy and the specific scientific
and technological areas in which a country excels are further revealed through
comparison with other major R&D-performing countries.

Since 1953, US R&D expenditures as a percentage of gross domestic product
(GDP) have ranged from a minimum of 1.4% in 1953 to a maximum of 2.9%
in 1964. Most of the growth over time in the R&D/GDP ratio can be attributed to
steady increases in non-federal R&D spending. Non-federally-financed research
and development, the majority of which is company financed, increased from
0.6% of GDP in 1953 to an estimated 1.9% of GDP in 2004 (down from a high of 2.1%
of GDP in 2000). The increase in non-federally-financed research and
development as a percentage of GDP is indicative of the growing role of science
and technology in the US economy.

Yet much of the R&D expenditures in the United States are concentrated
geographically in about ten states, and these states vary significantly in terms
of the types of research performed within their borders. In 2003, the top ten
states in terms of research and development accounted for almost two-thirds
of US research and development. California alone accounted for more than
one-fifth of the USD 278 billion of research and development that could be
attributed to one of the 50 states or the District of Columbia. Over half of all
research and development performed in the United States by computer and
electronic products manufacturers, for example, is located in California, Massachusetts and Texas, while the research and development by chemicals manufacturing companies is particularly prominent in two states, accounting for 61% of New Jersey’s and 49% of Pennsylvania’s business research and development. Together, these latter two states account for almost one-third of the country’s research and development in this sector.

The United States remains one of the biggest investors in research and development with the highest relative investment in basic research, most of which is conducted in its network of research universities. For example, in 2000, global R&D expenditures totalled at least USD 729 billion, half of which was accounted for by the two largest countries in terms of R&D performance, Japan and the United States. Worldwide, there remains a heavy concentration of research and development in seven major economies. Canada, France, Germany, Italy, Japan, the United Kingdom and the United States, performed over 83% of OECD research and development in 2002. At the same time, more money was spent on R&D activities in the United States in 2002 than in the rest of the G-7 countries combined (National Science Foundation, 2006, [link](http://www.nsf.gov/statistics/seind06/c4/c4h.htm#c4hl7)).

Research and development intensity indicators, such as R&D/GDP ratios, continue to demonstrate the advantages enjoyed by developed, wealthy economies in the global HT economy. Yet there are signs that competing countries are beginning to push R&D investment rates in both the public and private sectors that match or exceed the rates in the United States. Overall, in 2004 the United States spent 2.7% of their total GDP and ranked fifth among OECD countries in terms of reported R&D/GDP ratios. Israel (not an OECD

**Figure 2.** **US research and development by character of work, 2004**

![Pie chart showing research and development by character of work, 2004.](source: National Science Foundation (2006), Science and Engineering Indicators 2006, National Science Foundation, Washington, DC.)
member country), devoting 4.9% of its GDP to research and development, led all countries, followed by Sweden (4.3%), Finland (3.5%), Japan (3.1%) and Iceland (3.1%).

But there are two major market advantages for long-term economic growth for the United States relative to other economies. First is the high proportion of R&D investment by the private sector. Research and development performed by the business sector is estimated to have reached USD 219.2 billion in 2004. The business sector’s share of US research and development peaked in 2000 at 75%, but following the stock market decline and subsequent economic slowdown in 2001 and 2002, the business activities of many R&D-performing firms were curtailed. The business sector was projected to have performed approximately 70% of US research and development in 2007.

The second market advantage is the relatively high investment rates in basic research and the way that funding is dispersed. The United States expends approximately 18% of its total R&D portfolio on basic research; a little more than one-half of this research is funded by the federal government and performed in the academic sector. The largest share of this basic research effort is conducted in support of life sciences. Yet that advantage is beginning to wane as other countries have begun to re-allocate their total R&D portfolio, which was once heavily invested in development and applied research, toward blue-sky research. For example, the Russian Federation now spends 16% of all its R&D expenditures on basic research; in South Korea, which is currently the sixth largest R&D-performing member of OECD, the figure is 14%; in Japan 12%. Indicating the growing emphasis on promoting scientific research and HT innovation in the European Union, basic research now accounts for more than 20% of total R&D performance reported in France, Ireland and Italy.
In the postmodern world, however, national rates of R&D expenditures, and the role of public and private sector funding, fail to capture significant global shifts in research activity. With the growth of HT clusters and research expertise worldwide, US-based multinational corporations continue to expand their investment in R&D activity overseas. In 2002, R&D expenditures by affiliates of foreign companies in the United States reached USD 27.5 billion, up 2.3% from 2001 after adjusting for inflation. By comparison, total US industrial R&D performance declined by 5.6% after adjusting for inflation over the same period. Cross-country R&D investments through multinational corporations continue to be strong between US and European companies. At the same time, certain developing or newly industrialised economies are emerging as significant hosts of US-owned research and development, including China, Israel and Singapore. In 1994, major developed economies or regions accounted for 90% of overseas R&D expenditures by US multinational corporations. This share decreased to 80% by 2001. The change reflects modest expenditure growth in European locations, compared with larger increases in Asia (outside Japan) and Israel (National Science Foundation, 2006).

**Venture capital – US still most robust**

Venture capital is a primary source of funding for HT businesses. The United States remains the single largest source of venture capital, representing a major market advantage unmatched by any other major developed country. The lack of an equity investment culture, information problems and market volatility are factors that hinder the development of early-stage financing in many OECD countries.

In the United States, a continuum of capital providers (e.g. business angels, public and private venture funds) helps diversify risk and ensures a steady flow of quality deals. These networks – together with the use of staged financing instruments linked to performance, provision of technical and managerial support, and easy exits on secondary stock markets – have contributed to the survival and growth of portfolio firms. The number of venture capitalists with financial and technical expertise is limited in many countries and has not generally matched the rapid growth in risk capital supply across the OECD. Some countries, including Canada and Sweden as well as Israel, fill this experience gap by attracting venture investors from abroad (OECD, 2004).

In many countries, structural, regulatory and fiscal barriers act to constrain the development of a dynamic venture capital market and business environment. A 2007 study on venture capital notes that, around the world, almost 20% of all venture deals take place across national boundaries, an increase of 250% over the preceding five-year period. The authors observe that this trend has been accelerated by the practice of “venture licensing”, the replication of proven
business models in new markets (Ernst and Young, 2007). Even though Europe, Israel and the United States remain key in the industry, such practices are expected to lead to even more focus on emerging markets in the coming years.

Not everyone agrees, however, that national borders are disappearing as a factor in venture investment. US firms are merely dabbling in overseas markets. Although many US portfolios include foreign companies, most of the time these firms make up less than 5% of total firm investment. Instead, US venture firms appear to be taking a different approach to capitalising on emerging markets. About 88% of respondents to one recent survey indicated that their portfolio includes companies with a significant portion of their operations overseas, mostly in China and India. This figure is almost twice the number reported last year. One conclusion is that venture capital firms remain cautious about expanding their global portfolios and that, although the pace of global investment will continue to grow in the next few years, it will do so slowly (Deloitte, 2007).

Yet despite the small amount of portfolio space dedicated to investments in China and India, the sum of all of these smaller investments from around the world has made China a major presence in the industry. The report also provides a number of new models for global investment, including “international joint funds, strategic limited partners, local funds with a global brand, local teams under one global fund, or a hybrid of these models” that may ease some of the reservations of US firms about investing globally. These types of partnerships, which are already changing the face of global venture investment, may create an industry in which international investment is common, but a local presence is necessary.

**Intellectual property – United States as the first mover**

In part because it has been one of the most prolific generators of intellectual property, the United States has created a relatively elaborate and generally protective set of laws that, in turn, has significantly influenced economic development. Two major developments help to decipher the proliferation of intellectual property and its influence on the US market.

First, in 1980 the federal government revised patent and licensing law. The Bayh-Dole Act of 1980 opened the doors for universities and their faculty and researchers to own patents and issue licenses developed through federally-funded research. Previously, by allowing universities and research staff to jointly own discoveries supported by federal research grants, Bayh-Dole is credited with providing an important market force for creating the entrepreneurial university and for bolstering activity in a key economic sector, a model later replicated by other national governments, beginning with the United Kingdom during the Thatcher Administration. Bayh-Dole generated a revised worldview for both
the university and business sectors by encouraging tech-transfer, arguably an exaggerated sense of potential profits for researchers, universities and business partners alike. This national initiative, along with the funding of new federally-funded university-business centres in engineering, had another effect: state governments, and to lesser extent municipal governments, looked for new ways to harness their universities to support and grow their technology-based businesses and to compete for growing federal funding.

Another major shift in intellectual property laws was shaped by the legal system, and specifically what was liberally determined to be a patentable discovery or idea. Remarkable discoveries in the life sciences, fed in part by long-term investments in basic research, created relatively unique requests for patents and licenses. In 1980, the same year the Bayh-Dole Act was passed, the US Supreme Court upheld a lower court decision providing an extremely broad definition of “patentable material”, including the patenting of organisms, molecules and research techniques related to new biotechnology fields (Mowery et al., 2004). Arguably, the growing focus on patents and licensing by universities, and by industry, has had a deleterious effect on the sharing of information and discoveries that previously bolstered scientific inquiry. But this new focus has also encouraged greater investment by capital markets and resulted in research collaborations in the United States to a degree not yet replicated in similar developed economies. Within the US domestic economy, a record number of patents (more than 169,000) were issued in the United States in 2003, although the rate of growth in US patenting has slowed since 2000 (National Science Foundation, 2006, see Figure 6-6, Appendix Table 6-12). Nonetheless, US patents have enjoyed a period of nearly uninterrupted growth since the late 1980s.

The US also retains a strong market position in the number of international patents held and marketed to other countries. In 2003, US receipts totalled USD 48.3 billion and its trade in intellectual property produced a surplus of USD 28.2 billion, up about 5% from the USD 25 billion surplus recorded a year earlier. About 75% of transactions involved the exchange of intellectual property between US firms and their foreign affiliates. Exchanges of intellectual property among affiliates grew at about the same pace as those among unaffiliated firms. These trends suggest both a growing internationalisation of US business and a growing reliance on intellectual property developed overseas.

Yet another indicator of changing markets is the growing number of US patents held by foreign sources. In 2003, US residents accounted for about 55% of all successfully granted patents, while foreign inventors accounted for about 45% of the total. A decade ago, businesses based in Canada, France, Germany, Japan, the United Kingdom and a few other developed economies were the largest source of US patent applications. This has changed. Since 1997, South Korea and Taiwan replaced Canada and France in the top five foreign sources of
inventors seeking US patents. In 2003, Taiwan accounted for 9% of foreign sources of US patent applications and South Korea for close to 7%. Canada and the United Kingdom accounted for 5% and France for 4%. If recent patents granted to residents of South Korea and Taiwan are indicative of the technologies awaiting review, many of these applications will prove to be for new computer and electronic inventions. Also impressive is the growth in patent applications by inventors from China, Finland, India and Israel.

Foreign firms now account for about 36% of all US biotechnology patents. These patents are more evenly distributed among a somewhat broader number of countries than that for all technology areas combined. Another evident pattern is the more prominent representation of European countries in US patents of biotechnologies and the smaller representation by Asian inventors. Germany and Japan are not only the leading foreign generators of US patents overall, they are the leading foreign sources for US patents granted that are related to biotechnologies. Recently, however, Germany’s share of US biotechnology patents granted has been rising while Japan’s share has been falling. In 2003, Germany was still the leading foreign source, accounting for 6.5% of US biotechnology patents granted, up from around 4% in the late 1990s, while Japan’s share was 6.4%, about half the share held by Japanese inventors in the early 1990s. These patenting trends indicate that while the United States remains a leading source of patents, and offers a liberal business environment, there are
concrete signs of significant technology innovation in Asia and in a transitioning Europe.

**Tax policy – US most advanced and long term**

One major US advantage in shaping investment patterns and promoting risk-taking relates to tax policy at the federal, state and, increasingly, local level as well. The United States has long engaged in using tax structures not simply to generate revenue, but to shape economic behaviour – a characteristic fairly new to most other economies including the European Union that have focused on relatively simple tax structures. For example, bankruptcy laws in the United States have been the most liberal of any major developed economy, reflecting a political culture that essentially promotes entrepreneurship, recognises the high rate of failure among all types of businesses and spreads the risk so that a business failure does not mean permanent ruin. The complexity of the tax system has also long included “tax credits”, encouraging businesses to invest in technology and increasingly in research and development. At the same time, the US tax code is so complex and easily amendable that it is also subject to major political influence, largely by corporate interests, including the growing HT sector. State and local taxation systems, historically, varied significantly and were rather simplistic, including a sales tax in some states, an income tax model like the federal system or both.

Figure 5. **US biotech patents by foreign inventor, 1990-2003**

*Source: National Science Foundation (2006), Science and Engineering Indicators 2006, National Science Foundation, Washington, DC.*
But over the past three decades, states and local government have become much more engaged in shaping tax policy to attract desirable businesses, including high tech, and to generate investment in both university and business-based research. From 1990 to 2001, for instance, research and experimentation (R&E) tax credit claims by companies in the United States grew twice as fast as industry-funded research and development, after adjusting for inflation, but growth in credit claims varied throughout the decade. R&E tax credit claims reached an estimated USD 6.4 billion in 2001. From 1990 to 1996, companies claimed between USD 1.5 billion and USD 2.5 billion in R&E credits annually; since then, annual R&E credits have exceeded USD 4 billion. However, in 2001 R&E tax credit claims still accounted for less than 4% of industry-funded R&D expenditures.

Talent pool and mobility – attractiveness and openness for skilled labour and foreign students

The United States has reaped tremendous advantages by its early commitment to mass higher education. Over most of the last century, more Americans went to college and graduated, with many entering graduate programmes, than any other country in the world. Adding to the country’s supply of talent has been a relatively open market approach to attracting academics and researchers. In the 1930s, the United States provided a haven for preeminent scientists escaping Nazi Germany and World War II. The emergence of a large network of high quality, sometimes prestigious, universities that would hire foreign nationals as professors and researchers contrasted sharply with many if not most countries where university faculty held or hold civil service positions, and in which national governments limited the hiring of non-native talent.

Particularly after World War II, and beginning in earnest during the 1960s, the presence of foreign students in US universities also grew dramatically, supported sometimes by their national governments and increasingly by offers of student financial aid in graduate programmes such as engineering where, today, foreign nationals are often more than 50% of the total students in that programme.

In previous decades, students who came to the United States for both undergraduate and graduate programmes stayed largely in the United States and entered the job market. Their presence has influenced HT innovation dramatically and the growth of that sector in the US economy. For example, one study indicates that nearly one-third of all the successful start-ups in the Silicon Valley were started by foreign nationals, most of whom gained their training in US universities. As shown in the following charts, foreign nationals from Asia became the largest single source of talent coming to the United States for their education, largely in graduate programmes in science and
engineering. Bolstered by Chinese national government initiatives, students from China became the largest single source of foreign students in the United States beginning in the early 1990s. The overall growth in all foreign nationals entering US graduate degree programmes in that period also reflected a significant shortfall in the training of “native” US students in science, technology, engineering and mathematics fields and the push by HT economic sectors to get the talent they needed via US universities, and by successfully advocating more liberal visa policies for highly educated immigrants.

This pattern of attracting and then retaining talent is beginning to erode. The United States, along with other developed economies with mature higher education systems, is finding that a growing number of foreign nationals educated in science and engineering fields, and professionals that have long contributed to science and technology (S&T) innovation and businesses, are beginning to return to their native economies as they mature, buttressed by national policies to attract top scientific talent. Getting talent from abroad is an important component of the United States’ HT advantage. Educating a more robust native population should be an equally, if not more, important goal. A significant factor that will influence the United States’ market position, and the country’s general socio-economic health, is the significant relative decline in higher education attainment rates of Americans when compared to other developed economies.

Figure 6. **Geographic origin of foreign graduate students enrolled in US universities, 1960-2000**

Source: Survey of Earned Doctorates and Doctorate Records File, National Science Foundation and the US Department of Education.
Although the United States still retains a lead in the number of people with higher education experience and degrees, at the younger ages a different story emerges. On average, the post-secondary participation rate for those aged 18 to 24 in the United States is approximately 33% according to a 2005 study, down from around 38% in 2000. In the United States, more students today are part-time than in the past, and more are in two-year colleges. The wealthiest students are in the four-year institutions, and students from lower and even middle income families are now more likely to attend a two-year college, less likely to earn a bachelor’s degree and now take much longer to attain a degree than in the past.4

In contrast, within a comparative group of fellow OECD countries, many countries are approaching 50% of this younger age group participating in postsecondary education, and most are enrolled in programmes that lead to a bachelor’s degree. According to 2004 data, the United States has slipped from first to fourteenth in the higher education participation rate. Without a major effort by states and the federal government, and by higher education institutions, it is likely that this ranking will go down further over the next decade. The United States will undoubtedly remain a leader in high tech and will continue to draw talented graduate students and scientists to its unmatched network of research universities. Already the initial negative influence of the Patriot Act has ebbed and foreign applications to US graduate schools have begun to increase once again, although perhaps the numbers will grow at a slower pace than in previous decades (Council of Graduate Schools, 2007).
Because of concerted policy efforts and investment in education, however, particularly in science and technology programmes at universities, and the corresponding growth of S&T sectors, new competitors for faculty, graduate students and more generally talent will continue to grow in number and quality. The United States’ once dominant competitive advantage will diminish. Universities in the European Union, for example, have grown significantly in their ability to attract graduate students (outside of Oxbridge), and many are becoming more liberal in their willingness to hire foreign nationals as faculty. The Bologna Process and other policy initiatives seek great mobility of talent and jobs, influenced at least in part by the US model. Moreover, the emergence of English as the dominant language in academia and business once had, and remains, a market advantage for the United Kingdom, the United States and other English-speaking countries. But the use of English in non-English speaking countries, and the growing number of graduate programmes (particularly professional programmes) offered in English throughout the world is also diminishing the market advantage of US universities.

An emerging body of research largely produced by the scientific community and economists worries about the ability of the United States to continue its market advantage in both attracting and retaining talent from abroad. A congressionally requested report by a pre-eminent committee of scientists and S&T leaders, chaired by the former chief executive officer of Lockheed Martin Marietta, Norman Augustine, recently argued that “a comprehensive and coordinated federal effort is urgently needed to bolster US competitiveness and pre-eminence in these areas” (Committee on Prospering in the Global Economy of the 21st Century, 2007). The political traction of such analysis, however, has proven marginal, thus far.

Labour economist Robert Freeman has observed that a diminished comparative advantage for the United States in high tech will "create a long period of adjustment for US workers, of which the off-shoring of information technology jobs to India, growth of high-tech production in China, and multinational R&D facilities in developing countries, are harbingers". The United States will need to adjust, he notes, and reflecting the observations of many others, by developing “new labour market and R&D policies that build on existing strengths" and that recognise scientific and technological advances in other countries (Freeman, 2005).

Comprehending the significance of these market shifts will be key for the United State’s future economic competitiveness. As of this writing, America remains a country mired in a protracted and expensive occupation in Iraq and Afghanistan, facing a growing trade imbalance and a weakening economy. These realities, along with neoconservative Republican control of the White House which has been bent on reducing the role of government, has resulted in marginal investment in major and outstanding domestic needs over a
protracted period. As discussed later in this essay, there is a major initiative to increase federal R&D spending in the physical sciences, but it is unclear if it will survive in its present form in light of current economic downturn and the politics that surround the pending November 2008 presidential election.

A comparative assessment of the United States’ competitive advantage

The United States is a productive environment for science and technology and will remain so in the short run not only because of the excellence of its research universities and the growth of new business sectors like biotechnology. There is also the availability of venture capital, relatively high rates of R&D investment, and tax incentives and legal precedents that, thus far, are not yet matched in other economies.

With the exception of the dot-com bust, university research and HT economic growth remain robust in the United States. For example, the science and engineering (S&E) workforce in the United States has grown rapidly, both over the last half-century and the last decade. From 1950 to 2000, employment in S&E occupations grew from fewer than 200 000 to more than 4 million workers, an average annual growth rate of 6.4%. Between the 1990 and 2000 censuses, S&E occupations continued to grow at an average annual rate of 3.6%, more than triple the rate of growth of other occupations. Between 1980 and 2000, the total number of S&E degrees earned grew at an average annual rate of 1.5%, which was faster than labour force growth but less than the 4.2% growth of S&E occupations. S&E bachelor’s degrees grew at a 1.4% average annual rate, and S&E doctorates at 1.9%.

On average, US companies spend three times as much as those in Europe on research and development, and they have access to some ten times as much debt financing. This is one reason why many S&T firms in Europe and other parts of the world set up offices in the United States – not to gain access to scientific expertise, but to its capital markets. Because of the high cost for an initial public offering on the stock market, many international firms are merging with existing, and often fledgling, US firms.

The question is how long these US advantages will remain. The global environment is changing rapidly, with individual countries growing significantly in their R&D abilities, in part via government policies and in part because of expanding investment by the private sector. The European Research Area and the emerging 7th Framework are intended to boost significantly R&D investment and to help shape tax policies and the availability of capital.5

Table 2 offers an unscientific assessment by the author of the major factors that promote and sustain national and regional HT economies. Most of these advantage factors have, in some form, been discussed previously. Added
to our list are factors such as the overall quality of the science and technology workforce, mobility within a region or country for these workers, the concept of a relatively open business environment (e.g. collaboration between universities and business, and between different business enterprises, and the sharing of workforce and knowledge which is widely perceived as one ingredient to the success of Silicon Valley), and the overall quality of life offered to that workforce, including housing, local schools and transportation. Increasingly in cities and in regions with successful HT sectors, housing costs are rising with the real or potential threat of diminishing the attractiveness of the region for employees. Also, in the United States, urban area schools are generally declining in quality and there is poor public transportation and an increased division of rich and poor, all of which add strain to the quality of life.

The objective of Table 2 is to offer an assessment of the general status of these various advantages in supporting KBEAs in the United States, in the San Francisco Bay Area (including Silicon Valley and biotech corridors in San Francisco and around Berkeley) and in the European Union (particularly among the EU top five) on a ten-point scale – ten being the most favourable. In addition, the author’s sense of the trajectory of each advantage factor is indicated by a plus (going up) or minus (going down).

Americans are generally not looking across the Atlantic or Pacific, or across their borders, for ideas on HT policy making. Lawmakers and other policy makers are concerned about being competitive in the global marketplace, but the United States remains largely isolationist in its leanings despite the fact that the HT sector is increasingly an international endeavor. The focus of

Table 2. **National and regional factors for knowledge-based economic areas**

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>San Francisco Bay Area</th>
<th>European Union</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vitality of research universities</td>
<td>8</td>
<td>10</td>
<td>7+</td>
</tr>
<tr>
<td>2. R&amp;D investment – public</td>
<td>8+</td>
<td>9+</td>
<td>7+</td>
</tr>
<tr>
<td>3. R&amp;D investment – private</td>
<td>8</td>
<td>9</td>
<td>4+</td>
</tr>
<tr>
<td>4. Access to venture capital</td>
<td>10</td>
<td>10</td>
<td>6+</td>
</tr>
<tr>
<td>5. Intellectual property laws/Protection</td>
<td>9</td>
<td>9</td>
<td>8+</td>
</tr>
<tr>
<td>6. Concentration of knowledge intense companies</td>
<td>8</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>7. High quality workforce</td>
<td>6–</td>
<td>9</td>
<td>7+</td>
</tr>
<tr>
<td>8. Workforce mobility</td>
<td>9</td>
<td>10</td>
<td>6+</td>
</tr>
<tr>
<td>10. Supporting risk taking – culturally, legally</td>
<td>10</td>
<td>10</td>
<td>6+</td>
</tr>
<tr>
<td>11. Open business environment</td>
<td>8</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>12. Quality of life: housing, transportation</td>
<td>8–</td>
<td>7–</td>
<td>8</td>
</tr>
<tr>
<td>13. Political support/Government inducement</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

10 point scale: 1 = low; 10 = high; + = improving; – = declining.
Source: Author’s estimate.
government and much of the business sector is on protecting or expanding foreign markets, intellectual property rights and tax incentives, buttressing venture capital markets, and reducing restrictions on immigrant/visitor visas.

US political culture retains a sense that it is a country that remains the most productive and innovative home for science and technology, and that, for instance, the cure for cancer or the breakthroughs promised by stem-cell research will be home-grown. Thus far, this seems to ignore the significant knowledge centres in Europe and emerging science and technology centres in China, India and other parts of the world.

An important indicator of the research gains and HT productivity of Europe and other parts of the world is a relatively little known fact, at least among Americans. The United States no longer has a trade surplus in HT advanced products (and thus not counting mass consumer items such as electronics). A major bright spot in the overall trade imbalance has been its relatively strong export of HT goods and services. Maintaining and, indeed, enhancing this market position was one of the major reasons for the concerted policy efforts beginning in the early 1980s with the passage of Bayh-Dole and other federal initiatives that formed a formal transition of science policy as a major component of national economic policy.

For some two decades, the United States enjoyed a substantial surplus in HT products. However, as shown in Figures 8 and 9, between 2001 and 2002 the United States moved from a USD 6 billion surplus to a USD 15 billion deficit in these goods and services. In 2004, the deficit was more than USD 25 billion. Within the various categories of HT products, aerospace and electronics retained

Figure 8. **US trade balance in advanced HT products, 2000-04 (in billions)**

![Graph showing US trade balance in advanced HT products, 2000-04](image)

surpluses; the largest single deficit was in information and communications. It is important to note, however, that these shifts reflect the process of globalisation and the international nature of many HT businesses. American-controlled HT firms, for example, have products being created and manufactured throughout the world, as have other major international conglomerates. The blurring of national boundaries in terms of business activity, including finance, makes the story line of surpluses and deficits increasingly complicated.

Yet another indicator of the shift in the United States’ HT advantage is the growth of international patent activity (see Figure 10). The widely perceived US hegemony does not accurately reflect recent data. The accompanying chart demonstrates that among OECD countries the United States retains a major market position (Fontana et al., 2005). The growing European Union has an actual larger total number of patents, with a significant portion generated by individuals and HT businesses in Europe's top five economies. The trajectory indicates that Europe, and many other parts of the world, are making sizable and relatively fast gains as global players in HT markets. Even in the area of R&D investment, as noted earlier, the market is shifting.

As a percentage of gross national product (GNP), federal funding for basic research in the United States in the physical sciences and engineering has been declining for the past 30 years, to less than 0.05% in 2003. Asia’s developing economies are placing increasing percentages of the GNP into science and technology, and they are at the edge of a payoff, with their share of global high-tech exports rising from 7% in 1980 to 25% in 2001. According to National Science Foundation figures, the US percentage fell from 31% to 18% (National Science Foundation, 2006).
Cluster theory – the geographic dispersion of US high tech

While the United States remains a major source of HT innovation and job growth, among the various states there are significant differences in the geographic dispersion of mature KBEAs, particularly in the generation of new HT businesses and centres of venture capital. A recent study indicates that larger firms with over 1 000 employees are the most likely to collaborate with universities and other public research institutes (non-profits).

Further, most if not all of these firms are already engaged in R&D activity, sometimes via contracting research activity, and have therefore successfully built a capacity to absorb and use public-generated research (Fontana et al., 2005). Another study indicates, not surprisingly, that university-based start-ups are largely concentrated in states with the largest economies and with the largest levels of venture capital (Chukumba, 2005).

A recent study by Martin Kinney and Donald Patton illustrates the geographic concentration of firms that grow from being start-ups into public companies listed on the New York stock exchange (initial public offering of stock, or IPOs) and also the concentration of new HT activity in sectors such as semiconductors and biotechnology. IPOs indicate the maturity of the industry. Data is from the period 1996 through 2000 (Kenney, 2005).

As the accompanying two charts indicate (Tables 3 and 4), in the biotechnology sector, there is a heavy concentration of new firms in specific
regions: the states of Massachusetts (the Boston area), New York and the east coast corridor down to Maryland, along with California’s San Francisco Bay Area and San Diego. These regions accounted for approximately half of the 65 HT businesses going public. New IPOs emerged also in Georgia (Atlanta), Michigan (Ann Arbor), North Carolina, Texas (Austin and Houston) and Washington (Seattle).

Semiconductor IPOs in that period of four years were even more concentrated, with the vast majority in the San Francisco Bay Area and San Diego, followed by Boston and the New York to Maryland corridor. A similar pattern of concentration is found in the telecommunication sector. In all three HT sectors – biotech, semiconductors and telecommunications – there is a general reoccurrence of HT business activity. In each of these geographic areas, there is a link between existing and high quality research universities and the existence of an urban environment that has built, over time, a robust and talented workforce and research environment. There is also evidence that this workforce, including a significant number of HT business professionals, scientists and engineers, often

---

### Table 3. Cluster theory – the US example
**Location of semiconductor IPOs**
(44 firms going public, 1996-2000)

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Area – Northern California</td>
<td>61</td>
</tr>
<tr>
<td>Los Angeles/San Diego – Southern California</td>
<td>11</td>
</tr>
<tr>
<td>New York Corridor – New York, New Jersey, Connecticut</td>
<td>7</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>5</td>
</tr>
<tr>
<td>Oregon</td>
<td>5</td>
</tr>
<tr>
<td>Colorado</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
</tr>
</tbody>
</table>


### Table 4. Cluster theory – the US example
**Location of biotechnology IPOs**
(65 firms going public, 1996-2000)

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Area – Northern California</td>
<td>42</td>
</tr>
<tr>
<td>Los Angeles/San Diego – Southern California</td>
<td>8</td>
</tr>
<tr>
<td>New York Corridor – New York, New Jersey, Connecticut</td>
<td>12</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>17</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>6</td>
</tr>
<tr>
<td>District of Columbia Region – Maryland, Virginia</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>32</td>
</tr>
</tbody>
</table>

with immigrant backgrounds, are mobile, moving from one KBEA to another. Further, there is a distinct pattern in which the vast majority of venture capital investments are focused in these areas, specialising in making bets within an HT research and business environment that appears to offer the best potential payoff. Even then, one recent study estimates that some 70% of venture capital investments in US high-tech businesses fail.

At the same time, data collected by the US Bureau of Labor on the number of employees in HT businesses in both the public and private sectors indicates a much more dispersed geographic distribution (see Table 3). In this case, employment numbers include all those in businesses and industries classified by the US government as high tech, including financial services and industries such as automobile manufacturing and aerospace – a wide swath of activity in the economy.

Figure 11 shows the total employment in HT businesses by state and as a percentage of all workers – unfortunately, not by major regions within a state.

**Figure 11. Dispersed pattern of HT employment, 2000**

50 state comparison: high tech as a percentage of all state employment and university research and development per USD 1 000 of gross state product

The employment numbers indicate that while states such as California, Maryland (where there is a high concentration of federal and private research laboratories), Massachusetts, Michigan and Texas have many HT businesses, many other states have relatively high employment in HT industries as well. The chart also indicates the concentration of university research and development as a percentage of the state gross state product (GSP). Again, this data provides a more nuanced illustration of the role of university-based research and development in relationship to a state’s entire economy. Some big HT states, such as California which has the highest number of HT employees of any state and secures the most federally- and privately-funded R&D investments, have economies that are extremely diverse; in other words, high tech is important, and the role of research universities is a major factor in their economies, but neither is a dominant player now or for the foreseeable future in most states.6

One possible implication of the dispersed HT employment in the United States is that as this sector continues to mature, the traditionally dominant KBEAs may continue to create innovation and businesses, but actual employment may end up in other geographic areas – effectively helping to create competitors. Further, innovative HT businesses, as they grow, seek other locales, whether in the United States or increasingly in other countries, in which to locate part or all of their operations – one obvious example is the tremendous dispersal of the software industry. Efforts by governments to build and support KBEAs may reap significant local economic, and social, benefits, but they might not keep the investment locally as jobs are dispersed to other regions. These benefits are national and international.

In total, in 2000 some 8.8% of the workers in the United States were employed in the HT sector. In comparison, the EU-15 average for that year was 7.6%, with Germany having the highest percentage at around 11.2 – according to data collected by CORDIS. The problem is that this data is already old, although it is the latest data I could secure. The probability is that there is significant growth of nascent KBEAs in the European Union, the United States and elsewhere, building on the formula of university and private sector co-ordination and, increasingly, government-based initiatives.

**Funding initiatives in the United States**

The politics of high tech, and the devotion to new growth theory, yield a growing sense of competition and a remarkable new era of policy making, driven, in part, by a sense of urgency and by the natural laws of interest group politics. In the United States, this has created a remarkable level of effort by states and regional governments to make targeted investments that are relatively new, and to enter policy arenas once largely reserved for the federal government – the traditional source of public supported research and
Some investments are attempts to leverage federal funding, or to create new funding streams, for example to create publicly-funded venture capital in states that lack private investors, or in the case of stem-cell related research, to fill a void left by the Bush Administration’s edict effectively limiting severely federal funding for research thought improper by neoconservatives (see Douglass, 2007a). Even with recent advances for alternatives to embryonic stem cells, the unprecedented limits set by President Bush have, essentially, led to a entirely new pattern of basic science funding, largely by already high-tech and more liberal states such as California and New York.

Over the last decade or so, lack of leadership at the federal level in science and technology funding, where funding levels to date have been relatively stagnant except for the National Institute of Health, has resulted in state political leaders being active policy makers in areas thought vital to the socio-economic health of their respective state. This has occurred not only in science and technology, but also in health care, immigration and issues related to global warming and energy.

There is a prospect, however, of a significant new infusion of federal funding largely intended to bolster basic research and support the country’s HT efforts. Earlier in 2007, both houses of Congress passed legislation that incorporated many of the recommendations provided by the influential National Academies report, Rising Above the Gathering Storm (Committee on Prospering in the Global Economy of the 21st Century, 2007). But there was a need to reconcile the two different bills for final legislation to be signed or vetoed by the president. After months of negotiations, the House and Senate recently approved the most significant bill in years to bolster US research. The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act authorises over USD 43 billion in new federal spending over the next three years, that will support US math and science education and federal research agencies. In fact, the legislation would double the budget authorisations of the National Science Foundation, the Department of Energy’s Office of Science, and the National Institute of Standards and Technology (NIST) laboratory activities.

President Bush signed the COMPETES Act in August 2007, despite the administration’s strong reservation about some aspects of the legislation. The act establishes several new federal programmes to encourage innovation and commercialisation. The new NIST Technology Innovation Program will replace the existing Advanced Technology Program by providing competitive grants to small- and medium-sized businesses commercialising a critical new technology. Single companies may receive up to USD 3 million over three years, while joint ventures may be eligible for USD 9 million over five years. The bill also creates a new programme within the Department of Energy to develop technologies that help overcome the country’s long-term energy challenges. At the same
time, the bill omits several of the measures that had originally drawn the ire of
the administration, including a requirement that all federal science agencies
set aside 8% of their R&D budget for novel, pan-disciplinary research.7

The interplay of politics and policy

It is important to note the process of federal budgeting that may
significantly influence the true fate of COMPETES. With the war in Iraq,
competing priorities of Democrats and Republicans over the federal deficit, and
issues such as health and welfare policies, the final budgeting for COMPETES may
be significantly different. An earlier initiative by the Bush Administration with
similar goals has largely languished, in part because of the significantly different
budget priorities of his administration with a newly elected majority in the
House and Senate, and the fact that the United States is making only marginal
attempts to deal with outstanding domestic policy issues.

In addition, a new presidential administration that will be in place
by 2009 may also alter the federal commitment. Prior to the writing of this
article, no presidential hopeful has, thus far, made any significant announcement
on national science and technology, or the role of science in long-term economic
development. Significant new federal funding may indeed appear – some
increase seems inevitable as HT industry and the science community will
attempt to influence the platform of each party and HT businesses continue to
expand their lobbying power.

As discussed in this brief, even with the successful implementation of
COMPETES, states and local governments will likely continue to be the most
prolific generators of new HT initiatives, based on rational assessments of best
practices, new ideas, and increasingly the sense of competition and devotion
to new growth theory. In the course of a growing era of state initiatives, the
respective role of federal and state governments, and therefore the attention
of the S&T community, will continue to be substantially altered, again a
relatively new phenomenon. Further, the role of lawmakers and the HT sector
in driving new publicly-funded initiatives and tax initiatives, and of the
academic community is growing in complexity as only partially discussed in
this paper. The politics of HT policy making (why and how policy is generated
and how funds are invested), in the European Union, in the United States and
elsewhere, is an area of research that needs a more full exploration. The
perceived wonders of a high tech driven society, and the political culture it has
bred, are a driving force that is creating new policies and funding – perhaps
justified, but maybe not always.

Finally, there remains a large disconnect in US policy related to new
growth theory. Few policy makers, or even the higher education community,
are aware of stagnant and, in some states, real declines in higher education
access and graduation rates (see Douglass, 2007c). Combined with global changes in the market for S&T talent, and the significant trajectory of competitors to increase the educational attainment of their population, the United States’ HT advantage, and more generally its historical competitive advantages, will in some form continue to erode. This is the natural outcome of a much more competitive world, yet it is also due to an inability, or disinterest, by the United States in the fervent activities of other countries and regions. At the same time, the role of science and technology in society continues to grow; there is more room for new and growing competitors.

The author:

John Aubrey Douglass
Senior Research Fellow
University of California, Berkeley
128 Palm Drive
Piedmont, California 94610
United States
E-mail: douglass@berkeley.edu

Notes

1. This article builds on a previous analysis of US state-based high-tech initiatives in an earlier publication by the author. See Douglass, 2007a.


3. Compared with patterns in the United States, however, a considerably greater share is funded for engineering research activities in each of these three countries.

4. For an analysis of the decline in the US advantage in higher education access and degree production, see Douglass, 2007b.

5. A recent EU report states that Europe's lagging R&D intensity results from structural characteristics, including tax incentives and an improved environment for entrepreneurship among small firms, not underinvestment in R&D by individual and usually large European firms (Moncada-Paternò-Castello et al., 2006).

6. For a further discussion on the differences among the states in HT activity, see Douglass, 2007a.

7. The American Institute of Physics plans to run a series of articles in its FYI science policy news bulletin examining the details of the new legislation and its likely implications for US scientific research (see www.aip.org/fyi/).
References


National Science Foundation (2006), Science and Engineering Indicators 2006, National Science Foundation, Washington, DC.

University Engagement: Avoidable Confusion and Inescapable Contradiction

by

Chris Duke

RMIT University, Australia, and Universities of Leicester and Stirling, United Kingdom

This paper argues that it is the condition of the university for the time being to live with incompatibility of identity and purpose, and to tolerate an intolerable breadth of mission. This predicament is frequently masked, mercifully perhaps, by confusion of language used to analyse the role of the university, and unclear thinking about how this is best portrayed.

As will quickly become evident, this is relevant and important both to the leadership and management of individual institutions and for policy in respect of mass higher education as a system, in particular to the subject of diversity.
The context for this paper

The paper was prompted by the significant international conference convened by OECD in Valencia in September 2007; by the three-year project, Supporting the Contribution of Higher Education Institutions to Regional Development which preceded it and of which it marked the completion; and more specifically by Sir Howard Newby's opening keynote address, Universities and Regional Economic Development: A Strategic Perspective (Newby, 2007).

The project, and the Valencia conference which was addressed by the Secretary-General of the OECD and the Spanish Minister for Education, were significantly unusual in belonging jointly to two of the Organisation's directorates: the Directorate for Education, Employment, Labour and Social Affairs to become free-standing; and the Public Governance and Territorial Development Directorate. The partnership was a metaphor for and a manifestation of the requirement to connect higher education with its environment, and of the difficulties attendant on so doing. Nevertheless, the monograph Higher Education and Regions: Globally Competitive, Locally Engaged (OECD, 2007), which arose from the project and was launched at the conference, has been well-received.

Although the project was conceived as a study of regions with their higher education institutions (HEIs) it was led, within the partnership of two OECD directorates and the Higher Education Funding Council for England (HEFCE), by the Programme for Institutional Management in Higher Education (IMHE), an association of subscribing universities within the OECD structure. In some regions HEIs played the leading part in the project. Despite genuine efforts to balance institutional and regional policy perspectives, familiar and chronic difficulties about governance and management responsibilities necessarily split between ministries as well as levels of government, with their different priorities and accountabilities, featured commonly.

Partnership and collaboration, based on trust as a prerequisite for effective engagement, were tested throughout the work. Reciprocity is implied, requiring sufficient strength and confidence on both sides to make bargaining possible. Whereas universities are universally known institutions with strong identity despite their great diversity, regions are less well-established and still more varied in institutional form. They may be thought of, conventionally, as donors, grateful clients, even milch cows; but also potentially as difficult, interfering authorities with the power to help or harm the university and to...
threaten its autonomy. Even with the best will and the greatest clarity, the ground is muddy and hard to work.

The project and the monograph alike refer to higher education (HE), whereas I use the term universities in the title of this paper. The choice of language is deliberate. Not all higher education institutions are universities. But the idea, and often even now the mystique, of the university infuses discussion of involvement, engagement and accountability to society with the nervous current of the energy of autonomy and academic freedom. I would prefer to use the more inclusive term “tertiary” for the system, since issues of engagement, service and a systematic approach logically go wider than strictly speaking higher education. To do this however is to raise another set of questions best addressed separately.

Engagement – the new e-word

The notion of a third leg or strand of university mission and work is not new. Often it is traced back to the mid 19th century Land Grant universities in the United States, where service to “the community” of the supporting State was an explicit part of the founding purpose of those universities. In the United Kingdom, a different tradition of community service grew up in the later Victorian years, perhaps a manifestation of Victorians doing charitable work, but more consciously out of a sense of a duty to give higher education learning opportunities to those whom Thomas Hardy immortalised in *Jude the Obscure*, and to the sociologist no doubt as a means of bending a little to the rise of unionism and the creation of the Labour Party. University Extension reached out beyond the walls to take some of the intellectual wealth initially of Oxford and Cambridge out to those unable to enter the small, essentially private, system. Initially they therefore served extramural students in large “regions” together covering most of the country.

By the mid 20th century almost all universities were similarly engaged, and the country was divided up by central government regulation, allocating extramural territorial regions to the responsibility of each provider. Oxford and Cambridge themselves conceded territory as new providers came on stream, through to the present time: their distinctive and specialised continuing education or lifelong learning departments still both offer strong local-regional programmes but also enjoy a strong reputation internationally. The initial extension movement was quickly hijacked by a middle class clientele, but the early 20th century manifestation combining tutorial classes with the new Workers’ Educational Association resisted mission drift for longer. Its lineage may be traced, through plural metamorphoses, to the Widening Access movement that is prominent in HE policies in each part of the United Kingdom as well as beyond.
In British Commonwealth (then Empire) countries, this kind of outreach service was widely replicated with local variations; in other regions it is less evident that a third strand of service was acknowledged in the work of universities, which undertook teaching and research in different combinations. Only after the Second World War did the connections between university-based science and technology, in particular, and the world of its application become a visibly significant element, the industrial-military-government-academic complex becoming a target of radical hostilities. Now something essentially similar is applauded as a well-working triple helix. More recently still, universities have come to be seen as engines for the creation and joint application of research into innovation and on into productive enterprises: specialists manage intellectual property rights and patents; as shown in one presentation at Valencia, success is measured not only by non-governmental and third stream income but more specifically by number, size and profitability of patents and spin-off companies.

The earlier terminology of Extension, Extramural and Outreach implied a one-way process of taking knowledge selectively to those outside “the university community” – still in the language of an astute UK analyst a “secret garden”: the university gives or withholds; in practice this commonly meant that some within the loosely coupled and administered institution chose to do good works of this kind and that this was tolerated, if noticed at all, by “management”. The new language of partnership implies reciprocity, with benefit and effort flowing in both directions; for the university, a benefit obtained and a price paid. As universities multiplied, diversified and sought distinctive identities and niches on the road from selective to mass higher education, it was natural for the local region to become a focus for partnership and, as it came to be referred to increasingly in the closing years of the 20th century, engagement, notwithstanding the worldwide reach of many institutions and scholars. The concurrent trends of devolution to more local regions in many countries and globalisation persuaded the OECD to subtitle the monograph *globally competitive, locally engaged*. The same trends have spawned the unlovely neologism *glocal*.

Standing back a little, we see the idea of engagement coming of age as a natural companion along the road to mass higher education, and into an era when universities are obliged to become more entrepreneurial, more competitive, and therefore more marketable, open and user-friendly. Finding new roles, income streams and market niches are part of this new world and of new leadership requirements. The term is a significant step away from notions of extramural outreach and even service: it implies continuing partnership and reciprocity. This is an important and probably irreversible development reflected in literature and gatherings of the HE policy community (see for example Garlick, 2000; Bjarnason and Coldstream, 2003; Watson, 2007).
Problem A – two legs or three?

So far so good. Unresolved difficulties however soon became evident during the OECD project. A project template was prepared for regions to evaluate their performance in engaging HEIs in regional development, essentially reflected in the peer review reports that followed (see www.oecd.org/edu/higher/regionaldevelopment for the self-evaluation and peer review reports for the 14 regions). This asked reviewers to look in turn at regional innovation and human capital formation, which were translated as contributions to development through research (R) and teaching (T), alternatively referred to as education. This created a natural alignment with the two familiar kinds of work of universities, the “core business” of T and R. Because there are other aspects to regional development apart from innovation systems and the labour market, a third element was included: contribution to social, cultural and environmental development.

The difficulty is that the now familiar idea of three dimensions of university mission, Teaching, Research and Service (or Education, Research and Development [R&D] and Service to Community, see OECD, 2007, p. 40) as shown for example by John Goddard at the Valencia conference, is seen as a T-R-S triangle (Goddard, 2007). Goddard’s otherwise compelling analysis of the issues and of the work undertaken through the 14-regions project mirrors this triangle with a Skills – Innovation – Culture and Community (also Cohesion and Sustainability) triangle, as being three key dimensions to successful regional development. This appears, not convincingly, in aligning T with Skills, and Innovation with R (and R&D), to leave S to mean Culture and Community. His analysis went on more confidently to probe the complexities of “the regionally engaged multi-modal and multi-scalar university” and ways that partnership may be developed and barriers overcome: an implication appears to be that engagement or service should be integrated, giving us not three strands but two.

The triangle or tripod metaphor has been much used over recent years with the suggestion that three legs are needed for balance and stability. It has been reinforced by the expressions third strand of mission and, in the United Kingdom, by Funding Council third stream funding. This funding, revised and renamed from time to time, was in itself a sensible innovation to stimulate and reward outreach and engagement with business, industry, the region or community. Universities are not however organised in three parts to carry out three missions. Although teaching and research may increasingly be specialised to different academic individuals and units, there are only modest administrative and entrepreneurial arrangements for “service”. Notwithstanding the literature on different forms of scholarship extending Boyer’s four scholarships to five, to
include engagement, engagement is not built into the mainstream of academic structures, or generally into academic staff contracts and reward systems.

The mismatch between a service or engagement third strand and the deep, cultural as well as administrative, dual mission and ordering of traditional HEIs makes this triangular definition of mission difficult to put into practice. It suggests that rather than being considered a third stream or strand, engagement should be fully infused and embedded into the core (themselves not unconnected) teaching and research dimensions of the university’s mission, purpose and work. I argue that this applies generally, not only to certain classes or sub-sets of university.

Problem B – squeezing the important soft margin

Not surprisingly perhaps, the social, cultural and environmental elements of universities’ contributions to regional development received little attention in most of the review reports. Although in a few cases these were significant, especially but not only in the area of health, usually information was lacking. Given the short-term character of much national, regional and even institutional planning, and the preoccupation with hard numbers, short-term targets and measurable indicators, work in the cultural, civic and environmental areas is anyway unlikely to fare well until unmistakeable crisis and need arise.

This leads to double marginalisation of much of the most valuable work that universities could be doing for their regions, and through these as well as in their own right, to universal fields of scholarship applied to managing ourselves and our environment better. At the harder, more tangible end of an academic spectrum advanced science and technology are now universally recognised cutting-edge areas, attracting significant private and public sector funds in various forms, and flowing rapidly on toward commercial exploitation and sometimes gratifying returns by way of contracts, patents and spin-off companies. The long softer end of the spectrum comprising the pure as well as applied social sciences and humanities lacks this obvious commercial potential and appeal. Science-technology dominates in regional innovation systems (the R and R&D) area, while efforts are concentrated on attracting students at all levels up to post-doctoral into these same areas, for advanced human capital formation and professional updating, some closely linked with industrial partnerships.

Thus are the scales tipped towards the hard-applied science-technology end of the spectrum. The imbalance is increased by the inter-related impact of two powerful recent phenomena: research assessment as a basis for allocating research funds; and international comparative and competitive league tables. These league tables rank institutions on integrated world scales, while
themselves competing for primacy against other ranking systems. Many countries have become fixated on the notion of supporting a – necessarily very small and costly – number of universities to be “world-class”. Position in these most influential rankings, in turn largely determined by research performance based on a limited number of internationally recognised journals in each main discipline field, drives institutional ambition in a direction almost entirely inimical to regional engagement.

However superficially, engagement is then seen as a distraction competing for resources and energy. Along with the natural marginalisation of engagement resulting from traditional academic attitudes, structures and reward systems, the “softer” and especially the more applied fields of academic work find less favour in research terms, and are less easy to profile in world-class terms. The context-specificity of much work in the humanities and social sciences condemns them to the fringes, compared with the universal sciences and technologies, and to breadcrumb status when research budgets are allocated.

The relevance of this familiar dual marginalisation is that many of the social sciences and humanities, especially in their more applied, culturally and locationally connected manifestations, are important to the successful, balanced and sustainable development of a region. Yet they are at risk of being held in low value by the university, seen as costing money and effort rather than generating the significant income and reputation expected of the hard and applied sciences and technologies.

**The Newby question**

How can the cost and tension in this double marginalisation be handled? There is no doubt that higher education has become too big and significant a phenomenon to be left aside from national and regional planning, especially when neo-liberalism puts so much emphasis on global contest between knowledge economies. Without doubt we must continue to live with contradiction. Universities must be accountable to and of evident utility to their societies while retaining essential forms of academic autonomy. The need for regional development, whether narrowly economic or of a more balanced and sustainable socio-cultural-economic kind, merely dramatises an inescapable contradiction.

This brings us to Sir Howard Newby’s keynote presentation at the Valencia conference. By an eminent, broader-than-economics, social scientist this was about universities and regional economic development, but included consideration of such direct cultural impacts of universities as cultural innovation and creativity, attracting key knowledge workers by their cultural ambience, civilising influences, and contributing to civil society and the quality of life. The presentation brought out the highly interactive mutuality
UNIVERSITY ENGAGEMENT: AVOIDABLE CONFUSION AND INESCAPABLE CONTRADICTION

of influence between universities and regions. It saw the social inclusion mission as expressed through access and widening participation, rather than by more direct engagement with the regional policy process. It recognised that whereas universities’ contribution to the knowledge economy is attracting worldwide recognition by governments, competitive standards for research and also teaching, as noted above, are also global.

Newby saw the knowledge society advancing from technology transfer to knowledge transfer (much wider than just the new technologies) with its multiple challenges for university management, and into knowledge exchange, here acknowledging the critical role of knowledge brokers. An arresting statistic for Massachusetts Institute of Technology’s knowledge transfer portfolio showed 53% of its knowledge transfer taking place by means of consultancy and publications, conversations and conferences, only 7% through patents and licences. Newby calls for a balanced and pragmatic strategy to achieve knowledge transfer, taking a stand on the “third leg” of Knowledge Transfer alongside Teaching and Research. At the same time, in asking how to engage and how to separate this third function, he made clear the inappropriateness of trying to protect an “ivory tower” culture by handling engagement through another means. Newby’s analysis was persuasive. However, full third leg separation (as distinct from expansion of mission) appears to contradict analysis later in the address of the way that tech transfer becomes enriched as knowledge transfer and then as exchange, through continuously interactive collaborative brokerage-mediated exchange between science and the user, with a user voice active throughout.

The presentation recognised difficulties in moving knowledge exchange from marginal to core activity, including lack of incentives and the fact that it will not solve universities’ core funding problems. How then to move “from separation to engagement”, with knowledge exchange as core mission, involving also as this does “institutional positioning in the emerging HE market place”? Newby’s presentation concluded gnomically with “a third way?(!)”. Verbally he suggested that some can choose to be knowledge exchange HEIs as well as or instead of “majoring” in teaching and research. In the face of the demands of engagement for knowledge exchange, this appeared to favour an institutional division of labour balancing on either two or three parts of a three-part mission. In response to a question about recognising and enthroning the “noble art of knowledge exchange”, Newby observed that strong counters were needed in the face of world research measures: in short, using “bribery”.

The Valencia keynote speech gave focus to the tension between tripartite mission and the effective integration of engagement, alias knowledge exchange, throughout the research and teaching agendas. The suggested three distinct “legs” of mission, with options about the third, however appears fatally flawed from the viewpoint of regional and indeed national interest. It is a short step
from allowing universities to choose a knowledge transfer (and possibly a teaching) mission while others may opt for a research (with a teaching) mission while opting out of engagement, to saying that regional – alias local and second tier, seen as second rate – universities can look after exchange and engagement, while those enjoying world class standing – or the larger number having such ambitions – get on with R + T. Such is the seductive appeal of three legs, and the danger of confusion arising.

If some eminent universities – let us say in the case of the UK Cambridge, Edinburgh, Manchester and Oxford, or in the case of Australia ANU, Melbourne and Sydney – opt out of exchange and engagement, it is unrealistic to expect their less “research-active” and more local neighbour HEIs in these regions to look after that function on their behalf: such neighbours would have no hope of accessing and brokering that expertise in an authoritative way. Another version of regional role-sharing does however appear more plausible. This requires us to shift gear and to think at a systemic regional level, rather than just about separate and unique individual institutions. Here bells ring and hackles rise from the quarters of academic autonomy.

**Managing diversity – another way?**

Most universities continue to expect a significant element of public exchequer funding. Even private universities are required to meet at least some form of public and social accountability, and probably need a reputation for relevance and utility as well as high quality. Given the imperative for regions to engage the expertise of universities in assisting and even sharing leadership responsibilities for their development, a potentially more fruitful way forward is to charge the HEIs in a region collectively rather than individually with engagement and knowledge exchange, discharging between them the full range of requirements placed on the contemporary university. In this sense the unit of planning and performance audit becomes not the individual HEI but the regional group or system.

This does not absolve any university from considering engagement as part of the frame of reference within which its research is planned and undertaken, contracts negotiated, and teaching curricula continuously created, revised and recreated. It may mean that some within the regional collective or consortium assume more responsibility for engagement locally, others for the generation of the more high cost, globally referenced, pure or “blue-skies” research. Some might assume a greater responsibility on behalf of the group for local negotiation, partnership and brokerage, maybe developing selected staff from all the HEIs together, along with personnel from regional government and business, to become expert boundary-spanners and brokers on behalf of the collective regional enterprise.
This will only work if all the HEIs together share a responsibility, along with the prospective rewards, benefits and also penalties, of achieving, exceeding, or falling short of the full set of objectives and targets set across the full engaged teaching and research mission. It might be argued that this is too difficult to manage, monitor and evaluate at a level higher than a single HEI. In an age of auditors, evaluators and risk managers however, this set of technical tasks is well within reach.

More formidable is the task of sustaining the will to hold to such a path, and the energy to tough out active lobbying and passive resistance from those who may claim to be too eminent, too busily globally engaged, to accept any such co-accountability. Burton Clark’s entrepreneurial university with its strong steering core is well able to handle this kind of mission expression, including making binding partnerships and commitments entered into on behalf of the whole institution, without hampering the energy and creativity of academic departments and groups (Clark, 1998).

It might be argued that such an approach would only work in an “Anglo-Saxon” entrepreneurial context, even if the resistance of powerful universities can be turned. Universities in other systems on the European Continent and beyond do however appear to be approximating this kind of model.

It might be argued that such an approach marks the barbaric end of the already distressed autonomous and self-governing “true university”; but nothing in this proposal suggests that pure, frontier, curiosity-driven research and scholarly inquiry should be diminished, nor that all university endeavour must be utilitarian.

I consider universities to be an essential estate of any civilised realm. Their role in the retention and reinterpretation as well as the creation of new knowledge is as important to society as ever. At the same time, crises affecting the environment and the social structure require more dedicated academic attention than ever. Universities are an important though by no means the only source of wisdom, as they are of research. Wisdom, like research, can reside in all disciplines and fields of inquiry. All disciplines and all approaches are needed in the face of global complexity, and in the quest for meaning and integrity both universally and locally.

The kind of regional systemic approach to higher education planning and university engagement advocated here does not remove inescapable contradictions inherent in ever wider mission stretch. Nor does it solve the difficulty of assuaging conservative instincts and anxieties. But it does offer a less confused way of dealing with much vaunted system diversity. It is a firmer basis from which to engage with society, and to contribute more than just service, than is the three-legged stool.
The author:
Professor Chris Duke
Academic affiliations, Leicester, RMIT and Stirling Universities
26 St. Mary’s Crescent
Leamington Spa
CVX312 1JL, England
United Kingdom
E-mail: chris.duke@rmit.edu.au

Notes
1. IMHE had in fact addressed these issues in a previous report (OECD, 1999).
2. Usually referred to as silos although the term preferred by Project Director John Goddard (Newcastle University), reflecting an industrial rather than agrarian context, is stovepipes.
3. In a different world and with more bluntly economic but also equity objectives, we now see the creation in England of Lifelong Learning Networks which assign regional responsibility to trans-tertiary networks of providers with regional or locality stakeholders also directly involved.
4. The example of the University of Melbourne’s failed attempt to do this by creating Melbourne Private comes to mind.
5. This division and choice between mission elements is not dissimilar to the thrust of HEFCE funding arrangements, although close scrutiny of these in fact suggests that whereas universities could opt out of the research mission, widening participation and some form of engagement, as well as teaching, were not optional.

References
Globally Competitive, Locally Engaged: The Case of Kentucky

by

Aims C. McGuinness, Jr.
National Center for Higher Education Management Systems, United States

The Commonwealth of Kentucky, a state with among the lowest levels of per capita income and education attainment in the United States, embarked on an ambitious set of higher education reforms in 1997 aimed at elevating the state to the national average of educational attainment by 2020. At the time of their enactment, the Kentucky reforms were widely cited as models for other states on how to achieve a stronger link between postsecondary education and the future quality of life and economy of the population. Ten years later, the Kentucky Chamber of Commerce Task Force on Postsecondary Education commissioned an independent review to determine the state’s progress toward achieving that goal and to identify the tasks and challenges that remain.

The Kentucky postsecondary reforms were a complex and interrelated set of means and ends designed to transform the Commonwealth’s standard of living and quality of life. In broad terms, its intent was to develop a seamless, nationally recognised postsecondary education system that would both create a nationally competitive workforce and support the development of an economy that could employ that workforce. The focus of the reforms was not on higher education institutions, per se, but on increasing the capacity of institutions to contribute to the future of the state’s economy and quality of life. In this respect, the reforms reflect many of the themes of the recent OECD report Higher Education and Regions: Globally Competitive, Locally Engaged.
Profile of Kentucky

The Commonwealth of Kentucky, located in the Southeastern United States, has a population of 4.2 million. The state ranks forty-third in the United States in per capita income and has among the highest percentages of low-income families and adults with low levels of literacy in the country. Major sectors in the state’s economy include transportation equipment (automobiles), logistics (United Parcel Service), agriculture (horses and tobacco products) and coal mining. In fall 2006, the state’s higher education system enrolled 206 419 students in public institutions and an additional 32 000 in private institutions. The state system includes a major research university, a metropolitan research university, 6 comprehensive universities, and a community and technical college system with 16 colleges and 65 campuses. There are 21 independent (private) institutions.

Background of reform

The Postsecondary Education Reform Act of 1997, or House Bill 1, represented the culmination of several decades of studies, debate and action to improve education in Kentucky. The most significant event was the 1990 enactment of the Kentucky Education Reform Act (KERA) in response to a Kentucky Supreme Court decision declaring the state’s system of common schools unconstitutional. KERA is widely recognised as one of the most significant, far-reaching state-level education reforms enacted in the United States in the past quarter century.

A legislatively created task force, chaired by the governor with legislative and executive branch members, began a review in mid 1996. An assessment prepared for the task force identified four barriers to raising the educational attainment and economic competitiveness of Kentuckians. Firstly, leadership was lacking, especially from the existing Council on Higher Education. The Council was not sought as the principal source of advice on strategic budget issues by the governor and General Assembly and was perceived as being unable to counter the political influence of the University of Kentucky and regional universities.

Secondly, the assessment pointed to a lack of strategic financial planning and a funding formula that rewarded competition for the same students, rather than collaboration among institutions, and that provided insufficient incentives
for enhanced competitiveness in research and development, for differentiated missions or for resource sharing among the regional institutions.

Thirdly, there was no statewide commitment to plan strategically for the deployment of technology.

Fourthly, the report pinpointed financial barriers to students.

The assessment concluded that Kentucky’s postsecondary education system was not only ineffective in dealing with current demands, but also ill prepared for the realities of the emerging global knowledge-based economy.

The 1997 Postsecondary Education Reform Act won passage with the broad support of a coalition of business, civic and education leaders. Its central theme was to use the Commonwealth’s system of higher education to drive improvements to Kentucky’s economy and the quality of life of its citizens. As the statute reads: “The achievement of these goals will lead to the development of a society with a standard of living and quality of life that meets or exceeds the national average.”

Four other policy changes in 1998 and 2000 added significant dimensions to postsecondary education reform:

● The Kentucky Educational Excellence Scholarship (KEES), funded by lottery proceeds, provides postsecondary scholarships to students based on their academic performance in high school.

● The “Bucks for Brains” initiative matches state dollars with private donations to encourage higher education research activities. Endowment proceeds fund chairs, professorships, research scholars, research staff, fellowships, scholarships, infrastructure and mission support.

● The Kentucky Innovation Act of 2000 created the Kentucky Innovation Commission and established several special funds and programmes to spur innovation and commercialisation efforts.

● Senate Bill 1 (2000) substantially increased the state’s commitment to improve the educational attainment and adult literacy.

Goals of reform

Two different but related kinds of goals (referred to as Goals A and B throughout this article) became part of Kentucky law (see Figure 1). Goal A represents institutional “capacity” goals for the postsecondary education system. Within an overall goal to create a seamless, integrated system of postsecondary education strategically planned and adequately funded to enhance economic development and quality of life, the statute calls for five “institutional capacity goals”:

● a major comprehensive research university, the University of Kentucky, ranked nationally in the top 20 public universities;
GLOBALLY COMPETITIVE, LOCALLY ENGAGED: THE CASE OF KENTUCKY

- a premier, nationally recognised metropolitan research university, the University of Louisville;
- regional universities with nationally recognised programmes of excellence and nationally recognised applied research programmes;
- a comprehensive community and technical college system;
- a co-ordinated system to deliver educational services, comparable to or exceeding the national average, to adult Kentuckians.

Goal B is the ultimate goal to be achieved by 2020: to develop “a society with a standard of living and quality of life that meets or exceeds the national average”. This goal is widely interpreted to mean that Kentucky should achieve a level of per capita income that meets or exceeds the national average by 2020. Because the level of a state’s per capita income is directly related to the college-level education of its population, the goal is further interpreted to mean that Kentucky should strive to reach or exceed the national average in this area.

Figure 1. Inter-related goals of postsecondary education reform

Policies to achieve the goals

The reform act established a number of policies to support the goals. These included creating two new entities: a policy leadership and co-ordinating entity, the Council on Postsecondary Education (CPE), and the Kentucky Community and Technical College System (KCTCS). The act mandated the CPE to develop a strategic agenda and implementation plan to achieve the 2020 goals and to share the strategic budget process and accountability system.

Another policy concerned a new financing framework, including strategic investment and incentive funding programmes aligned with the goals.
The act also called for a mechanism, the Strategic Committee for Postsecondary Education (SCOPE), intended to engage the General Assembly and to foster adherence to the strategic agenda in the policy and budget development process.

Figure 2 summarises the major elements of postsecondary reform.

**Figure 2.** Key elements of postsecondary reform – summary of attainment analyses

Ten-year evaluation

In 2007, the Kentucky Chamber of Commerce carried out a ten-year evaluation of the reforms. The evaluation framed its work around a series of questions to gauge the progress that has been made in the past decade and to identify the challenges that remain. Its findings were developed by analysing changes in demography, educational attainment, the economy over the past decade and, from a comparative perspective, by:

- analysing changes within Kentucky’s postsecondary education system;
- reviewing the implementation of policies put in place by the 1997 reforms;
- conducting interviews with current and former state policy leaders and with institutional presidents;
- gathering comments from Kentucky employers, educators and citizens in nine regional forums.

The following is a summary of the principal findings.

**Progress in building capacity**

Kentucky has made significant progress toward meeting the capacity goals established in 1997: enrollments at all institutions have increased and
degree production has accelerated. Perhaps the most significant, if subtle, impact of the reforms is increasing the aspirations and confidence of the whole system to achieve unprecedented levels of performance. The excitement and hope stimulated by House Bill 1 (HB 1) contributed directly to the attraction of new leadership at the state and institutional levels – leadership that would be critical to the capacity of the state to make progress toward the reform goals.

The enrollments at all public institutions have increased from 148,082 to 206,419, or 39.4% from 1997 to 2006. The most significant increase was in the newly established community and technical college system. From 1997 to 2006, degree production increased 23.4% at the research and comprehensive universities and 193% at the community and technical college system.

The research universities made significant progress toward their goals of national competitiveness as reflected in increases in national ranking, research expenditures, endowments, and endowed chairs and professorships. Business start-ups that developed from university research activity increased as well as national recognition for partnerships to address statewide and regional priorities.

Each of the comprehensive universities made progress toward the goal of becoming universities with nationally recognised programmes of excellence and nationally recognised applied research programmes. All these institutions strengthened their undergraduate, graduate, and professional and diversified funding sources through increased private giving and endowments. The mission of the comprehensive universities is now more focused on uplifting the education attainment and quality of life in their regions. One of the more prominent examples is the national recognition gained by Northern Kentucky University (NKU) for “stewardship of place” – the partnership of the university with regional business, civic and educational leaders in shaping a new vision for the future of Northern Kentucky. Based on the NKU example, the 2006 General Assembly appropriated funds to support “regional stewardship” initiatives at all the comprehensive universities.

The establishment of a community and technical college system is the most visible accomplishment of HB 1. Fourteen community colleges and 15 technical institutions have been consolidated into 16 comprehensive community and technical colleges to create a dynamic statewide system. KCTCS gets high marks for responsiveness to the workforce and employer needs across the Commonwealth and is now the largest provider of postsecondary education and workforce training in Kentucky.

In addition, Senate Bill 1 related to adult education led to one of the most respected adult education programmes in the country.
One of the most pronounced impacts of the reforms has been in the development of non-state funding for higher education. In 1998, the state enacted a new dimension of the reforms called the Endowment Match Program or “Bucks for Brains”. The purposes of Bucks for Brains were to provide incentives for significant increases in non-state funding to enhance research funding, increase the number of endowed chairs and professorships, and expand the commercialisation of research and related business development (Council on Postsecondary Education, 2007). The state’s investment of USD 350 million to date in “Bucks for Brains” has yielded USD 350 million in matching funds for a total increase of USD 700 million in the core capacity of the institutions.

Progress toward long-term goals

Even as Kentucky develops stronger, nationally recognised institutions, questions remain regarding the impact of this increased capacity on the education of the Commonwealth’s population and improvements in per capita income and quality of life.

Education pipeline

While Kentucky has made progress toward the institutional capacity goals of HB 1, it has made far less progress toward the goal of a seamless postsecondary education system. In other words, the pieces of the system are stronger, but they must significantly improve the way they work together as a system. The major leaks that now exist are:

- low completion rates for high school;
- the gap between the requirements for high school graduation and a General Education Development test and the level of preparation needed for postsecondary-level study;
- low degree completion rates at the associate and bachelor’s levels;
- low transfer rates from KCTCS and universities.

Statewide averages on any of these “leak points” mark vast disparities among regions of Kentucky counties.

Figure 3 compares Kentucky’s education pipeline to the US average and best performing states.

Kentucky has a long way to reach the national average, much less the level of the best-performing states. Of 100 Kentucky ninth graders, only 65 complete high school in four years, only 37 directly enter college, only 24 enroll in a second year and only 12 complete either an associate degree in three years or a bachelor’s degree in six years.
Education attainment

Even as Kentucky has been making slow progress to catch up with the US average, the state’s position related to other countries has been slipping. As a state, Kentucky trails 14 other OECD countries in the percentage of young adults with college degrees, associate and higher (see Figure 4).

The education levels in the majority of Kentucky’s counties mirror those of some of the least educated OECD countries. Only two of 120 counties are at or above the US average, almost half (59) are below Mexico, and 17 are below Turkey, the OECD country with the lowest percentage of college educated population. The ability to attract new business and industry in many parts of the state is severely limited by the low education levels of the workforce.

Per capita income

Per capita income has increased at the same rate as that for the country as a whole. Kentucky is running harder to stay in place. The important point, however, is that in the period since 1997, Kentucky’s per capita income as a percentage of the national average has remained the same at 82.1%. In contrast, in the same period, the per capita income as a percentage of the national average decreased in Indiana from 92.5% to 90.3% and in Ohio from 96.5% to
92.4%. Postsecondary reform arguably contributed to Kentucky’s ability to avoid the decline experienced by neighbouring states (see Figure 5).

Per capita income varies enormously from one part of Kentucky to another. It approaches the national average in the urban parts of the state, but is only two-thirds of the national average in the rest of Kentucky.

Figure 4. **Per cent of adults with an associate degree or higher by age group – Kentucky, United States and leading OECD countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>Age 25-34</th>
<th>Age 35-44</th>
<th>Age 45-54</th>
<th>Age 55-64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>35.9</td>
<td>32.5</td>
<td>35.2</td>
<td>31.0</td>
</tr>
<tr>
<td>Japan</td>
<td>38.4</td>
<td>31.7</td>
<td>31.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Korea</td>
<td>23.9</td>
<td>17.7</td>
<td>17.6</td>
<td>10.0</td>
</tr>
<tr>
<td>Norway</td>
<td>25.9</td>
<td>20.0</td>
<td>20.9</td>
<td>14.6</td>
</tr>
<tr>
<td>Ireland</td>
<td>21.8</td>
<td>16.7</td>
<td>16.7</td>
<td>11.1</td>
</tr>
<tr>
<td>Belgium</td>
<td>24.0</td>
<td>18.4</td>
<td>18.4</td>
<td>13.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>22.3</td>
<td>17.8</td>
<td>17.8</td>
<td>12.6</td>
</tr>
<tr>
<td>Spain</td>
<td>21.9</td>
<td>16.7</td>
<td>16.7</td>
<td>11.1</td>
</tr>
<tr>
<td>France</td>
<td>24.5</td>
<td>19.5</td>
<td>19.5</td>
<td>13.9</td>
</tr>
<tr>
<td>United States</td>
<td>31.3</td>
<td>24.1</td>
<td>24.1</td>
<td>17.3</td>
</tr>
<tr>
<td>Kentucky</td>
<td>38.4</td>
<td>31.7</td>
<td>31.7</td>
<td>24.0</td>
</tr>
</tbody>
</table>


Figure 5. **Per capita personal income as a per cent of US average – Kentucky, 1960-2005**

Source: Regional Economic Information System, Bureau of Economic Analysis, US Department of Commerce.
Earnings by degree level

The difference in earnings of individuals with an associate or bachelor's degree compared to only a high school diploma has remained essentially the same over the past decade, while the economic benefits of earning a degree have significantly increased at a national level.

There are marked differences among regions of Kentucky in the benefits in terms of additional income for those with higher levels of education. The increase in earnings from a high school diploma to a bachelor's degree ranges from USD 7 134 in one region to USD 19 365 in the Northern Kentucky region.

Net-migration related to education level and age

An indicator of the strength of a state's economy is the extent to which the state has net-migration of more highly educated people. Overall, Kentucky imports more people in younger and older age groups who have a high school diploma or less. The state is a net loser of 22- to 29-year-olds who hold a bachelor's degree but a net gainer of degree holders among 30- to 64-year-olds.

Mixed signals on the demand for an educated workforce

Data suggest that the creation of highly skilled jobs in Kentucky is not keeping pace with the production of highly skilled workers. Getting more education leads to better earnings in Kentucky, but not at the level in other states. In addition, in many parts of the Commonwealth, the differences between a high school diploma and a college degree are far less than the statewide average. Nevertheless, a series of focused Chief Executive Officer Dialogue Sessions conducted by KCTCS in every region of Kentucky found a high demand for qualified workers. The 306 session participants identified locating qualified employee applicants as one of the top three challenges facing Kentucky over the next five years. Two of the top three challenges facing regions' business and industry over the next three years were lack of a sufficient pool of qualified workers and limited availability of technically skilled employees. The report cites the dramatic changes in the state's workforce as a critical dimension of the challenge.

By 2025, Kentucky's working-age population will decline by 7%, while the number of citizens 65 years and older will increase more than 64%. The state faces a potential loss of 100 000 workers as the Baby Boomers retire. The majority of jobs and careers they leave behind will require workers with specialised training, degrees and certificates, most at the two-year college level.

The categories identified as not having a large enough pool of qualified candidates in the next 18 months and the next 3 years were those that require postsecondary education: qualified trade/technically-skilled candidates and supervisory level candidates. The top five occupational areas in which regions are
facing the most severe employee shortages all require postsecondary education: nursing, medical technical professions, teachers/educators, skilled trades and information technology (Kentucky Community and Technical College System, 2007).

Kentucky must increase dramatically the quantity and quality of persons with postsecondary-level knowledge and skills to create a pool of qualified candidates necessary to meet the needs of employers seeking to gain a competitive edge in the knowledge- and innovation-based economy. At the same time, the state needs to accelerate the growth of an economy in all regions that will employ a highly skilled workforce. Except in certain professional fields such as education and the health professions, the current demand is primarily at the associate degree and certificate level. The challenge in the quest to achieve the ultimate goal of HB 1 (Goal B) is to continue to grow an economy that will attract and retain a population educated at the bachelor's degree level and above.

In summary, over the past ten years, Kentucky's education attainment and per capita have improved, but not fast enough to make progress toward the goal of reaching or exceeding the national average. The challenge is made even more difficult as other OECD countries move further ahead of Kentucky in the education attainment of their younger populations.

Are the goals still valid?

As emphasised earlier, there are two interrelated goals of postsecondary reform: Goal A, the institutional capacity goal and the sub-goals related to each of the major postsecondary sectors and adult education; and Goal B, the ultimate goal of increasing the Commonwealth's education attainment and per capita income to levels that meet or exceed the national average. The conclusion of the ten-year evaluation is that these two goals remain valid and are even more important to the future of Kentucky than when they were adopted in May 1997. Many pieces of the programme are in place and doing well, but the state will need to work aggressively to reach the national average of educational attainment. The state must seamlessly integrate its education agenda at all levels – beginning with early childhood and preschool and continuing through secondary, postsecondary, adult and lifelong learning. Throughout the process, the Commonwealth must clearly define and support strategies that make the connections that exist between education and the development of a knowledge- and innovation-based economy real and productive.

As noted earlier, the 1997 reforms created goals that were strategically inter-related.

The critical point is that Kentucky must link institutional capacity (Goal A) to both stopping the leaks in the education pipeline to produce more
graduates and to contribute to innovation and economic development, in order to achieve the ultimate 2020 goals (Goal B) related to education attainment and per capita income.

**Barriers to progress**

Despite perceptions that reform has made a difference, the ten-year evaluation identified several barriers to achieving the goals of the reforms.

One barrier is the lack of alignment of standards, curricula and assessments. Students advance through the secondary and adult education system planning to pursue postsecondary education but then find that they are under-prepared for college-level study. Likewise, students who attend community colleges intending to complete bachelor's degrees at the universities find that they are under-prepared for upper-division undergraduate study. Most students (more than 80%) attend postsecondary institutions within the region where they were born and attended secondary education. Their teachers graduated from universities within those same regions. Despite these relationships, the extent to which universities and schools collaborate to improve the success of students moving through the education pipeline differs significantly among regions in Kentucky. The Commonwealth is a leader in the United States in efforts to achieve alignment among the levels of education, but the challenge remains in translating policy intent at the state level into the realities of education delivery at the regional and school levels.

Another barrier is inadequate policy leadership and co-ordination. The state policy leadership and coordinating structure established in HB 1 is not working as intended, and the history of the budget process from 1997 through 2007 shows a steady drift away from a strategic alignment with the reform goals. If Kentucky is to achieve the goals of HB 1, the state must restore co-ordination, discipline and accountability in the system.

The lack of alignment between finance policy and reform goals is also a hindrance. A key dimension of the postsecondary education reforms was the alignment of finance policy with the reform goals. As the state's economic conditions worsened in 2002 and political leadership changed, the state found it increasingly difficult to maintain the basic alignment outlined in the reform legislation. The reform legislation called for allocation of incentive funding to support the institutional capacity goals and to encourage links between this capacity and the long-term goals. As economic conditions worsened, the state eliminated funding for incentives. As the state emerged from reform, the newly-elected state leaders failed to recommit to the reform. The result was an increasing drift away from the original intent of postsecondary reform. A basic conclusion of the ten-year evaluation is that Kentucky must recommit to the fiscal policy principles of HB 1.
The threats to affordability prevent meeting, the reform goals as well. Students and families are bearing a higher percentage of the cost of postsecondary education. In relationship to family incomes in Kentucky, the Commonwealth’s postsecondary system remains reasonably affordable for full-time students. Nevertheless, serious gaps exist in affordability for part-time and independent students. Participation and success in postsecondary education, especially for first-generation students, is seriously hampered by lack of effective guidance and counselling of students beginning as early as seventh and eighth grades, the lack of incentives for students to take the right courses and stay in school to prepare for college, and the complexity of the student aid programmes. Kentucky needs a major overhaul of its policies to ensure affordability of postsecondary education for all qualified Kentucky students – both youth and adults.

Finally, the goals are compromised by comparatively low productivity. The challenge of meeting the 2020 goals, both developing institutional capacity (Goal A) and the ultimate goal (Goal B), will require a substantial additional investment. It is unrealistic to assume that these resources will come only from additional state appropriations. The cost of reform should not be shifted primarily to students and families. Additional funding from private sources (e.g. endowments) will be insufficient to fill the gap. This leaves no alternative but to make significant sustained improvements in the productivity of the postsecondary system, that is, a significant increase in degree production in a more cost-effective manner. Kentucky produces comparatively fewer bachelor’s degrees for the level of funding than other states. No single solution is available to tackle the productivity gap. There is a need for both sustained public investment and more effective resource use. Solutions must focus on quality, cost and access – they should not sacrifice one (e.g. quality or access) to make progress on another (e.g. cost containment).

Alternatives for the future

The ten-year evaluation recommends that the Commonwealth:

- Reaffirm the original goals, focusing on both building institutional capacity and the long-term goals related to education attainment and per capita income.
- Sharpen the differentiation among university missions giving more emphasis to regional engagement in the missions of comprehensive universities.
- Establish a pre-school through graduate education/lifelong learning framework to improve alignment of standards, curricula and assessments between levels and to plug the leaks in the education pipeline for youth and adults.
Establish a stronger link between higher education reform and statewide and regional economic development. Among other points, the state should establish a new investment fund providing incentives for both regional economic development/innovation and linking higher education to regional development.

Recommit to the original budgetary framework of the reform legislation, especially the use of strategic investment and incentive funds related to each of the reform goals.

Strengthen mechanisms to sustain reform over changes in political leadership and economic conditions. Among the points, the state chamber of commerce should establish a statewide leadership group to monitor reform and convene an annual conference to highlight progress toward the 2020 goals.

Lessons from Kentucky reforms

Several lessons emerge from the Kentucky reforms, most of which reflect themes in the OECD report Higher Education and Regions: Globally Competitive, Locally Engaged (2007).

Higher education can be a critical force for regional development in promoting innovation, developing human capital, and promoting social, cultural, and environmental development. Nevertheless, it is difficult for higher education institutions to carry the burden of regional development alone without active partners on the side of the region's business, civic and political leadership. The original Kentucky reforms emphasised developing the capacity of the higher education system largely on the conviction that this would lead to a more competitive state economy, but this was insufficient for the Commonwealth to make significant progress toward the long-term goals. Progress on regional development also requires a parallel effort to mobilise regional business, civic and political leadership to define regional needs and strategies. Bridging mechanisms, including funding incentives, are needed to foster effective partnerships between higher education and regional development. In the future, Kentucky will give more emphasis to statewide regional and economic development and incentives to establish effective “bridges” in each region involving all the region's stakeholders and institutions.

An institution must embark on fundamental changes in leadership, management, and internal reward systems and culture if “regional engagement” is to be at the core rather than periphery of an institution's mission. Northern Kentucky University is a nationally recognised leader in “stewardship of place”, a mission reflected in the institution's extensive partnership with the business, civic and educational leadership of its region. Achieving this mission has required deliberate, persistent leadership for significant internal changes
cutting across all dimensions of the institution's traditional teaching, research and service roles. Kentucky is attempting to extend this mission to all the state’s comprehensive universities. The success of this initiative will depend significantly on the commitment of institutional leaders (governing boards and presidents) to bring about necessary internal changes. It will also require, as noted above, parallel efforts on regional development and the establishment of needed bridging mechanisms. In contrast to Northern Kentucky, regional development capacity is weak in many of the least developed parts of the state.

The external policy environment can be a significant force – both positive and negative – for regional engagement. In the Kentucky case, the initial reforms emphasise developing the capacity of each sector: research universities, comprehensive universities, and community and technical colleges. The original intent was to foster collaboration among the sectors to develop a “seamless” system. In reality, the incentives in the state’s funding policies stimulated intense competition rather than collaboration among the sectors. The pronounced “leaks” in the education pipeline are one consequence of this competitive environment. State funding policies provided few incentives for institutions to collaborate with regional economic development or elementary and secondary education. In the future, Kentucky will modify its funding policies to emphasise collaboration at every level of the system in a campaign to achieve significant increases in the number of students who move through the system to obtain degrees. Incentives will also be provided for research university researchers to be engaged in regional innovation, especially in regions away from the location of the main university campus.

The capacity to measure and report on progress is a critical component of successful reform. The metrics used for assessing progress in regional engagement must include more than progress in developing higher education capacity. The Kentucky case illustrates an effort to assess the long-term impact on a region’s education attainment, economy and quality of life. The use of data regarding a region’s population and economy to identify critical issues and opportunities is a fundamental step in shifting the policy discussion from “higher education” to the role of higher education in a region. Nevertheless, serious gaps remain in data necessary for this kind of analysis even in Kentucky where the state has devoted more than a decade to developing the needed information systems.

Sustaining reforms over changes in leadership and economic conditions is a major challenge. The Kentucky case illustrates the critical role that leaders played at the state and institutional levels to advance the initial reforms. The state’s business and civic leaders were essential partners in the reform efforts. Over time as leaders changed, the momentum for reform stalled. The commitment to reform was sustained, however, through the state’s business leadership and the initiative of the institutional presidents.
The Kentucky case illustrates how difficult it is to bring about long-term, sustained change in a higher education system. In too many cases, the emphasis is on the excitement of the initial reforms and their promise for change. Less attention is given to the long, hard work to bring about change institution by institution, region by region. Even less attention is given to how to measure the ultimate impact of the reforms on the educational opportunities, quality of life and economy of the region. Even though the progress is slow, Kentucky continues to persist in its efforts to reach its ultimate goal of “a society with a standard of living and quality of life that meets or exceeds the national average”.

The author:
Dr. Aims C. McGuinness, Jr.
Senior Associate
National Center for Higher Education Management Systems
3035 Center Green Drive, Suite 150
Boulder, Colorado 80301-2251
United States
E-mail: aims@nchems.org

References
Council on Postsecondary Education (2007), Ten Year Anniversary of Kentucky’s “Bucks for Brains” Initiative, Draft October.


Provincial University of Lapland: Collaborating for Regional Development

by
Ari Konu and Eero Pekkarinen
Provincial University of Lapland and
Kemi-Tornio University of Applied Sciences, Finland

In 2002, four Finnish higher education institutions established a consortium called the Provincial University of Lapland with the purpose of supporting the development of the region, widening access to higher education, increasing collaboration between educational institutions and fostering innovation. The consortium provides degree and non-degree education. The Provincial University of Lapland reaches out to the province’s remote communities through a combination of traditional education and distance learning. It takes advantage of existing facilities in four of Lapland’s six sub-regions. The Provincial University has a broad portfolio that includes open education, professional development courses, expert and R&D services, as well as estimation and evaluation services. Provision of services is based on regional needs that focus on upgrading the tourism industry. Learning and development needs have been mapped in each of the four sub-regions in collaboration with a wide range of public and private stakeholders. The higher education institutions are engaged in strategy development and implementation at the regional and sub-regional levels.
Introduction

**Lapland**

Lapland is the biggest and northernmost province in Finland; its 98,947 square kilometres cover almost one third of Finland’s land area. It is the country’s most sparsely populated province, with an average of only two people per square kilometre (in 2003). The population is estimated to decrease to 171,000 by 2020, which will have a major impact on many sectors of the province.

Lapland is a region of great natural beauty and diversity. As the last wilderness in Europe, it draws increasing numbers of tourists who come to experience nature and get a taste of the local culture. Finland has always been a multicultural country; its best known cultural groups are the Finns, the Swedes and the Sami. The Sami, an indigenous people of northern Europe, suffer from the depopulation of Lapland. Because of the different languages and the declining number of students living in the sparsely populated areas outside the school centres like Rovaniemi and Kemi-Tornio, education is especially difficult to organise.

The province of Lapland is made up of six sub-regions, which in turn consist of municipalities. The sub-regions are entities constituted on the basis of collaboration and exchange between municipalities. They also act as the basic units of distribution of regional European Union subsidies.

**The university system in Finland**

The system of higher education in Finland consists of two parallel sectors: academic universities and polytechnics. The academic universities are characterised by scientific research and the topmost level of teaching based on the results of the research. The polytechnics (universities of applied sciences), on the other hand, focus on work life and its demands for high-quality vocational proficiency.

In developing Finnish university education, co-operation between academic universities and universities of applied sciences is bound to increase, and the Provincial University of Lapland is one such form of co-operation.
Figure 1. **Higher education in Finland**

The Finnish education system

**ISCED** = International Standard Classification of Education.
What is meant by a provincial university?

In Finland, a provincial university refers to a co-operative network between the universities in a province and representatives of a sub-region. In close collaboration with a region, a provincial university provides both educational and research and development (R&D) services. It brings closer to the people, businesses and public sector officials those educational opportunities and services that the universities offer the sub-regions. With the help of systematic regional co-operation (objectives, planning, reporting and method development), the higher education institutions work to achieve the effective use of resources together with regional coverage and influence.

A provincial university is not a physical institution or organisation, but a network bringing together the authorities that deal with higher education and R&D services in a sub-region. In order to serve the sub-region, these authorities design the university education, provide the needed resources and co-ordinate implementation via various operators.

Regional orientation guides the operations of a provincial university consortium. The network of universities offers education and research to satisfy the demands of the adult population and commerce in a region. And education is planned according to the needs of the sub-region.

A provincial university increases the impact that a higher education institution has on its region. The additional value is produced by means of open education offered by both traditional universities and universities of applied sciences, vocational continuing education, degree programmes, and research and expert services. How and to what extent the educational scheme of the provincial university is realised depends on the region, its operators and its objectives. Several principles are united in the concept of the provincial university: lifelong learning, a network-based operating model, regional service and interaction (based on the third mission of the universities) (Koski, 2006).

Background and objectives of the Provincial University of Lapland

The Provincial University of Lapland is a network of professionals from the University of Lapland, two polytechnics (Rovaniemi and Kemi-Tornio Universities of Applied Sciences), the Summer University of Lapland and the sub-regions of Lapland; its principle objective is balanced development of the province. It offers a new way of enhancing individuals’ competence, communities and regions. The operational background of the provincial university includes the regional responsibilities of the universities, divergent needs in different parts of the sub-region and rapid structural changes. The six sub-regions of Lapland differ from each other as far as their aims, structures and stages of development are concerned, and this was taken into consideration in developing the model of the provincial university. The
network supports the aims of the industrial policies of the sub-regions. Thus the level of education will need raising in industries that are central to the viability and development of the sub-regions.

An important objective of the Provincial University is to bring education and research services closer to the people of Lapland. In practice this means utilising information technology and virtual universities or polytechnics. The Provincial University of Lapland provides open education in academic universities and polytechnics, vocational continuing education and degree programmes. Once basic competencies in the sub-regions reach an adequate level with the help of open university education, the Provincial University can, if necessary, organise regional degree programmes leading to either a bachelor’s or a master’s degree. The Provincial University carries out R&D work, co-operates in implementing projects and offers other professional assistance that supports the region.

Operating model of the Provincial University of Lapland

A special co-operation board has been set up in each sub-region. It includes representatives of the region’s industrial and educational sectors, non-formal educational institutes, other local educational organisations, employment agencies and regional enterprises – in addition to the representatives of the Provincial University of Lapland (i.e. the University of Lapland, the Rovaniemi and Kemi-Tornio Universities of Applied Sciences and the Summer University of Lapland). The mission of these sub-regional boards is to map both the educational needs and the objects of research/product development that support the area’s industrial and commercial objectives; these objectives along with those of the Provincial University collectively form a competence strategy in each sub-region. In addition, the co-operation bodies also launch educational projects, take care of practical educational arrangements in the area and evaluate their effects on the sub-regions.

Together with the higher education institutions in Lapland or other areas of Finland, a co-operation group, consisting of representatives from the universities, negotiates the services required to meet the sub-regions’ demands. The co-operation group maintains the Provincial University of Lapland portal, which contains information on available education and online support services. The co-operation group also prepares new types of educational models, promotes the development of mutual education organised by several educational institutions, and gathers experience on sub-regional co-operation and its impact.

The Provincial University of Lapland has regional or municipal organisations responsible for co-ordinating interaction between the various education and information services. A large part of the degree programmes
serving the sub-regions are organised in co-operation with local vocational and liberal adult education. Local community groups use the buildings of vocational schools or upper secondary schools for their meetings. In addition, university students take advantage of information services offered by public libraries.

**Additional value produced by the operating model**

The Provincial University of Lapland’s role of directing and developing the operations of local universities clearly produces additional value compared with former working methods. Below is a list of benefits gained by operating according to the new centralised methods:

- **Regional education and development based on the needs of the sub-regions.** On the regional level, need-oriented working methods ensure that the universities support local development organisations, providers of public services and businesses by preparing the workforce and developing research. For the locals, need-oriented working methods mean education that ensures employment in their own region.

- **Long-term planning of education and research and development.** Long-term planning increases the predictability of operation and the preparation time...
for the benefit of the universities, regional co-operation operators, and assisting and financing agencies.

- **Combined resources and contributions.** The operating model combines the activities and special know-how of the different parties and thereby ensures the educational level that is needed.

- **Regional higher education activity ensured.** The Provincial University of Lapland strengthens regional significance in the operation of Lappish universities (the so-called third mission). As an example, the provincial university, which was started as a pilot project, was established at the beginning of 2006.

**Results and influence of operation**

The Provincial University of Lapland is now in the phase of implementing the competence strategies. Today eight degree programmes are operating in vocational schools or universities in Lapland, in compliance with the objectives of the Provincial University. Degree education, provided in each sub-region of Lapland, is organised in several ways: education offered to an open education group in a single municipality, multipoint teaching that serves several groups in several municipalities, and interactive online teaching that enables individual participation. The supply of open education has increased in the regions, and students can choose open education courses at traditional universities as well as courses at the universities of applied sciences. The accessibility of education has been improved by developing the information services and technology needed in distance learning and teaching, by producing both mutual study guides and an education portal for distance learners ([www.maakuntakorkeakoulu.fi](http://www.maakuntakorkeakoulu.fi) – select Provincial University of Lapland), and by providing tuition subventions.

Degree education has been designed to support the key industries in the sub-regions in accordance with local competence strategies. The sub-regional degree programmes cover tourism (at both academic and polytechnic levels), health care, business and administration, and information technology. Parts of the degree programmes are also available as open university education, which widens the target group and influence of education.

According to an evaluation of the Provincial University of Lapland, the greatest influence can be seen at the national and provincial levels. As a national pilot project, the Provincial University of Lapland has awakened considerable interest, says the evaluation report, and the image of both the project with its different parties and the whole province has been enhanced. The report regards the provincial university experiments – which have been started around Finland and which each have a slightly different contentual and structural emphasis – as the most concrete modes of influence. At the
provincial level, the Provincial University of Lapland, as a producer of education and research, is considered to be a developer for the area (Martikainen, 2005).

The Provincial University of Lapland’s impact at the provincial and individual levels is apparent in the increase of regional education possibilities, people’s subsequent eagerness to pursue their education, co-operation both inside the province and with the universities, and the general rise in the level of qualifications. The influence that education has had on employment is regarded as a significant result. According to the evaluation report, nearly everyone who had attended degree education believed that they would find work, specifically in their own region. In the light of the effects identified, the Provincial University of Lapland can be recognised as contributing to educational and social equality (Martikainen, 2005).

Establishing the Provincial University

While establishing the Provincial University of Lapland was welcomed and successful, a certain amount difficulties were also encountered. The difficulties occurred when implementing and disseminating the new concept and working methods. Some of the most challenging were the following:

- **Needs of the sub-regions.** Defining the common orientation and needs of a sub-region is not always easy. Because the municipalities differ from each other in their history, industrial structure and future expectations, the actions of the Provincial University must be planned accordingly.

- **Slowness.** In order to be efficient and influential, university education requires decisions and actions from several parallel but individual organisations. The Provincial University, which acts as a mediator, must be patient and diplomatic.

- **R&D co-operation.** Significantly small businesses, common in Lapland, are unaccustomed to receiving support from universities or research institutes when developing their operations. To convince them of the benefits of co-operation requires continuous, innovative efforts. Some university branches are not interested in or familiar with off-campus R&D activities.

The near future

Once the basic tasks (continuous interaction, open education and degree education) have become routine, the Provincial University of Lapland will place more emphasis on R&D activities. Innovative experiments related to the delivery of research competence, to finding target companies and to financing will be central to developing the Provincial University.

Under the guidance of the Provincial University of Lapland and based on its experience, the provincial university model will be adopted throughout
northern Finland, uniting two universities and five polytechnics to serve one half of the country.

The authors:
Ari Konu
Director
Provincial University of Lapland
Rovaniemi University of Applied Sciences
Jokiväylä 11 C
96300 Rovaniemi
E-mail: ari.konu@ramk.fi

Eero Pekkarinen
Development Director
Kemi-Tornio University of Applied Sciences
Kauppakatu 5
94100 Kemi
Finland
E-mail: eero.pekkarinen@tokem.fi

References
Koski, A. (2006), Avoin yliopisto alueellisena toimijana (Open University as Regional Operator), Centre for Extension Studies of the University of Turku, Turku.

The Contribution of Higher Education to Regional Cultural Development in the North East of England

by

Eric Cross and Helen Pickering
Newcastle University and Universities for the North East, United Kingdom

In the United Kingdom, the creative and cultural industries in the North East of England have notably contributed to the region’s economic development. The city of NewcastleGateshead’s recent renaissance has helped redefine the region’s cultural identity. Higher education has played an important part in the North East of England region, whether through heritage buildings such as Durham Castle, or the newly built facilities within Newcastle University’s cultural quarter. The North East universities also play a leading role in developing knowledge and skills for the cultural sector by supporting new businesses, supplying student volunteers, and making a critical contribution through staff research and collaborative doctoral studentships.

The success of the universities’ engagement with the region depends on strategies and structures within both higher education and governmental bodies responsible for the cultural sector; universities work with a wide range of central government departments, sector skills councils, regional development associations, local government, and cultural organisations such as the Arts Council and the Regional Cultural Consortia. In many ways the cultural value of the universities’ contribution is often intangible, but as major contributors to the quality of life and economic prosperity, often partnering cultural organisations throughout the region, the significance of this contribution cannot be ignored.
Culture as a driver of economic development

The importance of the creative and cultural industries to economic development has long been acknowledged. In the United Kingdom they represent the fastest growing business sector (8% of gross domestic product [GDP]); the United Kingdom has the largest creative sector in the European Union, and probably, relative to GDP, the largest in the world: “Today there is growing recognition of the subtle but important growing linkages between the vitality of the creative core, the creative recognition of industries beyond and creativity in the wider economy” (The Work Foundation, 2007, p. 16).

From the BBC to the Beatles, the United Kingdom's creative and cultural industries enjoy a high profile and strong reputation throughout the world, and in 2004 they contributed some GBP 13 billion in export value.\(^1\) Nowhere in the United Kingdom is this economic impact of culture more apparent than in the North East of England, where culture has been used as a major driver of the regional economy and has also contributed to significant improvements in the physical and environmental conditions of the area. The renaissance of NewcastleGateshead over the last decade, with its iconic developments along the River Tyne including The Sage Gateshead and BALTIC Centre for Contemporary Art, is a tangible example of this power. Cultural development is also recognised as a tool for the development of the region’s people and communities, and in 2005-06 the Department of Culture, Media and Sport (DCMS) produced a “Taking Part Survey” which reported that 93.9% of the North East population had engaged in some form of cultural activity.\(^2\)

Richard Florida (2000) emphasises the contribution of the “creative class”, in which he includes more than 30% of the US workforce: around 38 million scientists, engineers, architects, educators, writers, artists and entertainers, all of whose economic function he sees as generating new ideas, new technology and new creative content. Interestingly, his thinking has developed more recently, and he now views the key to economic growth in the creativity of all, not just the 30% in “creative class” jobs (Florida, 2005).

Florida’s “creatives” are innovative, flexible, highly skilled entrepreneurs, driving forward the knowledge society, masters of technology, talent and
tolerance. This link between creativity and the knowledge economy is also underlined in the recent report on the creative industries from the DCMS:

Knowledge and creativity have always played a key role in the knowledge economy. For example, high-tech manufacturing and universities are two long-standing building blocks in the economic structure of advanced capitalist economies. However the concept of the knowledge economy goes further. It captures a paradigm shift in which a critical mass of economic activity falls into the category of knowledge production, as firms deploy new technologies and techniques to meet important changes in the structure of demand. (The Work Foundation, 2007, p. 17)

Cultural development can also be seen as a signifier of social renaissance. The economic regeneration of NewcastleGateshead has helped redefine the cultural identity and regional pride of the city’s population, symbolised by the iconic Antony Gormley sculpture of the Angel of the North and Wilkinson Eyre’s Millennium Bridge. The regeneration serves to attract talent from outside the region and retain it within, building a critical mass which has helped redress a major regional problem of graduate retention that has historically threatened the North East. It can support cultural diversity and promote social cohesion, raising the quality of life. It is difficult not to be struck by the genuine social mix of visitors to the BALTIC, or of those strolling around the Quayside outside.

But not everyone accepts the link between culture and social inclusion or indeed with regeneration more widely. Lisanne Gibson and Deborah Stevenson (2004), for example, claim that, despite Glasgow’s reputation as a case study in culture as a successful regenerative tool, “there has to date been no research to investigate the cultural, economic, political and social effects of Glasgow’s reconstruction of itself in the late 1980s and early 1990s as ‘a creative city’”. Glasgow’s reformation was, of course, the result of its designation as European Capital of Culture 1990, and it was NewcastleGateshead’s bid to be the 2008 Capital of Culture that acted as catalyst for much of the current emphasis on culture in the North East of England. There can be little doubt that the North East has learnt from the Glasgow experience, and actions are being taken to ensure that social inclusion lies at the heart of the cultural developments. The energy and enthusiasm behind the 2008 bid undoubtedly brought people together into new and effective partnerships; for example, the newfound spirit of co-operation between Newcastle University, Newcastle City Council and the Regional Development Agency One NorthEast, which grew out of the development of the University’s Cultural Quarter, including the GBP 26 million Great North Museum project, has more recently blossomed into the visionary plan of Newcastle as a Science City. Many of the region’s universities have responded by developing their own cultural strategies, often clearly articulated as part of their institutional plans and closely integrated with developments in their local areas.
The importance of creative thinking to all sectors should also be borne in mind, and particularly the powerful mix of scientific enquiry and creativity. This is something that has been explored particularly by NESTA, the National Endowment for Science, Technology and the Arts. In one of their recent publications, Anthony Sargent and Katherine Zeserson (2007) remind us that “study after study diagnoses the same success factors in effective, successful businesses and organisations – qualities like agility, fluidity, inventiveness, human connectedness, and the essential balance between individualism and collectivism in the generation and production of creative ideas – all hallmarks of the processes of scientific discovery and artistic origination and reproduction”. The current interest displayed by all the UK Research Councils in exploring and stretching the boundaries between science, technology and artistic creativity is reflected in several recent developments in the North East universities, such as Teesside’s Digital City, Sunderland’s Media Centre and Newcastle's Culture Lab.

Higher education and cultural development

Cultural presence and identity

Just as icons such as the Angel of the North and the Millennium Bridge in Gateshead or Symphony Hall in Birmingham can help define cultural identity and create a sense of place, so many universities establish a cultural presence through their physical manifestation, often involving a mix of historic buildings and striking modern architecture. Durham University includes the World Heritage Site of Durham Castle, while its Queen’s Campus in Stockton-on-Tees has a modern waterfront location not unlike Sunderland University’s St. Peter’s Campus on the River Wear; here the creation of the impressive GBP 15 million National Glass Centre, which brings glass blowers of international repute to work alongside the university’s students, is situated a stone’s throw away from the medieval St. Peter’s Church, home of the first stained glass ever made in England. Northumbria University has just opened its new City Campus East, which incorporates its highly regarded Design School, as part of a GBP 136 million investment in its physical estate.

Because of its environmental approach to construction – something highly appropriate for a building which houses an Institute for Research on Environment and Sustainability – Newcastle University’s Devonshire Building, opened in 2004, won the Royal Institution of Chartered Surveyors’ North East Renaissance Award for Building of the Year. Culture Lab, housed in the Victorian Grand Assembly Rooms, provides a heritage setting for the very latest digital technology; it goes together with other cultural buildings including the Northern Stage theatre, the new Great North Museum which includes the former Hancock Museum with the Hatton Gallery of Fine Art, and
the proposed Northern Writer’s Centre, also comprising a mix of old and new with a renovated Victorian building and a purpose-built modern performance space, to make up a Cultural Quarter that seeks to invite the public onto the campus rather than make them feel like unwelcome trespassers. This element of public interface, reflected by the Cultural Quarter’s location directly facing Newcastle’s Civic Centre and through its outreach activities such as concerts and public lectures, is matched by the aspiration of many other UK universities that now see their engagement with the public as a central activity that needs to be pursued physically as well as intellectually.

Here again a sense of place is important. Various aspects of Newcastle’s Cultural Quarter aim to maintain a sense of regional identity, from the “gateway to the landscape of the North East” concept of the Great North Museum, which will provide a display and orientation gallery for the World Heritage Site of Hadrian’s Wall, to the promotion of regional folk music in the Centre for Excellence in Teaching and Learning in Music and Inclusivity, a title that underlines the importance of the social agenda in much local music-making.

**Cultural diversity**

Higher education makes a major contribution to diversifying the regional cultural landscape. The combined universities in the North East of England attract more than 15 000 international students to the region every year from well over 100 different countries throughout the world, and alongside these comes a more long-term cohort of overseas staff. (One of the effects of the increasing reliance on the web over the last few years for advertising academic vacancies has been the growing proportion of international appointments from both Europe and further afield.) Both groups contribute hugely to the richness of regional diversity, intellectually and culturally, and many of the international partnerships in the arena of arts and culture, whether through the exchange of musicians for individual concerts and festivals celebrating particular ethnic traditions or through the display of temporary exhibitions in museums or art galleries, help establish wider multi-disciplinary links. Universities are often leaders in cultural debates, promoting international understanding and tolerance. Indeed, the claim of Bloomfield and Bianchini that “an intercultural approach aims to facilitate dialogue, exchange and reciprocal understanding between people of different backgrounds” fits neatly within the commitment of higher education to an “open society” and the promotion of international understanding (Bloomfield and Bianchini, 2004).

It is interesting that the recent report for the Joseph Rowntree Foundation on cultural diversity in Britain makes little direct reference to universities (Wood et al., 2006). While occasionally the work of universities is mentioned in passing, it is not credited to the institutions, despite the fact that education and the arts and creative industries are two of the six aspects of local activity...
Knowledge and skills development for the cultural sector

Academic programmes provide one of the main career routes into the cultural sector. Traditionally, however, many have focused on developing specialist creative skills rather than the broad range required when artists set themselves up in business. Now the challenge for higher education is to offer some of the non-specialist skills, such as financial management and marketing, both within existing programmes and as short courses for the wider sector. Universities are well placed to provide these areas through their business schools, as well as more focused managerial programmes in areas such as arts management; they also offer broader interdisciplinary experiences through combined programmes. Other generic training is offered in entrepreneurship and leadership, and again the range of disciplinary approaches to creativity and leadership, from art-form specific to more generic programmes such as Master of Business Administration, which places higher education in a strong position to address these needs.

While the greatest demand for work-based learning within the sector is currently around business skills and entrepreneurship, upskilling in specific creative skills is also important, not least in areas such as digital media, where technologies are constantly changing. The recent emphasis placed on higher level skills by government through the Higher Education Funding Council of England has placed a new spotlight on this whole area of provision.

Partnerships in the development of professional practice draw on the mutual strengths of both universities and cultural institutions, creating a practitioner knowledge base. One of the strengths of the North East of England is that both universities and cultural venues are used to collaborating with each other, so it is not surprising that various cross-sectoral partnerships have been established. For example, Northumbria University offers a Master of Arts (MA) in Theatre and Performance Practice with Live Theatre, a recently refurbished venue with a history of fostering new writing, an MA in Fine Art and Education in collaboration with BALTIC, the Centre for Contemporary Art, and co-operative programmes with Dance City. The Centre for Excellence in Teaching and Learning in Music and Inclusivity is a partnership between all
six Universities for the North East and The Sage Gateshead, a partnership with a number of projects combining the professional expertise of The Sage Gateshead in performance and other areas with the varied and largely complementary strengths of the different universities.

Work placements are an obvious bridge between academia and the professional environment, offering benefits of real-life experience for the students and extra capacity coupled with a fresh approach to the receiving business. While these placements are most commonly within the region, there are some programmes that offer a national and even international range of options, giving students a genuinely global perspective on their discipline. These international links are also fostered by student exchange programmes, which can bring a range of international students into the region in the same way that visiting fellowships can attract staff from overseas for short periods, again introducing new cultural perspectives.

**Cultural businesses and engagement**

Support for students, and sometimes staff, in the creation of new cultural businesses – often one-person businesses, like so many small and medium-sized enterprises in the cultural sector – is an important role for universities. Enterprise centres and incubation units offer facilities and advice for students making the transition from study to profession, providing support through business mentoring schemes. Networks are essential for small businesses, and the experience of university staff and their contacts across the region, drawing on successful alumni as a key resource, can provide the support and mentoring that are so critical in the early years of a new business.

Volunteering is an alternative form of engagement to more formal placements and is often attractive to students not on culturally-related programmes. Students from a university theatre society, for example, are often keen to be involved in professional productions, whether on stage as extras, supporting the technical or back-stage team, or assisting in publicity or marketing. There are also opportunities to work in the voluntary sector, supporting community-based enterprises, perhaps working with disadvantaged groups. Volunteers are often key to the successful functioning of cultural institutions, whether manning the front desk in an art gallery or helping catalogue or conserve museum or library collections. The regional development agency One NorthEast recently set up a Regional Cultural Volunteering Programme whose website helps network volunteers from across the region join a Knowledge Exchange Community (http://kx.onenortheast.co.uk/rcvp).

Here culture and sport come close together; Durham University has a major volunteer programme to support various sporting initiatives working with disadvantaged groups within the local community. As we move towards
2012 and the Olympic Games in London, options to link cultural projects with sport will become increasingly attractive, not least to access funding. Student volunteers within cultural organisations also offer a link to engage the potential audience of the wider student body. One of the major challenges for universities is to draw on this potential audience for cultural events; here the use of new technology may be key, even if just using text messages as a means of advertising events.

**Cultural research and knowledge exchange**

One of higher education’s most important contributions to the cultural sector is in expanding the knowledge base through research, whether in creative areas (e.g. performance practice in music or theatre, or developing new creative technologies within digital media) or more desk-based (e.g. research in marketing, audience profiles or cultural policy). Knowledge exchange is facilitated through mechanisms such as Knowledge Transfer Partnerships, in which students or staff are placed within an organisation in order to share expertise in a specific area; these partnerships and related programmes are offered by various funders including the Arts and Humanities Research Council (AHRC) and One NorthEast to support innovation in the cultural industries.

AHRC also provides a programme of collaborative doctoral awards to fund PhD students within the context of an external organisation to work on issues that will benefit both the organisation and the institution in which he or she is also based (a comparable scheme to the long-standing CASE studentships funded by the Economic and Social Research Council). These not only allow the organisation to benefit directly from the student’s research but also give the student an in-depth understanding of the business within which he is working. Several North East universities have already established a record of successful collaborative awards with organisations such as The Sage Gateshead, Tyne and Wear Museums, Seven Stories, the Centre for Children’s Books, and the Tyneside Cinema, while Teesside University’s links with the Audio Visual Festival offer various student opportunities.

Academic groups such as the Cultural Management Unit at Northumbria University and the International Centre for Cultural and Heritage Studies at Newcastle University often work together with regional institutions over specific research topics, as well as with the North East England Cultural Observatory, which is based in Culture North East, the Regional Cultural Consortium.
Critical success factors

National policy context, frameworks for action and institutional commitment

The success of the universities’ engagement with the region depends to a great extent on the strategies and structures both within higher education and within the governmental bodies responsible for the cultural sector. National government needs to work across the key departments, particularly the Department for Culture, Media and Sport and the new Department for Innovation, Universities and Skills; too often policies are formed in a vacuum without full consultation across departmental boundaries, while dialogue with the sector skills councils as well as the Arts Council England is also important.

Within individual higher education institutions, too, it is easy for mechanisms and structures to detract from the successful liaison with external organisations. Arts departments do not have access to the range and size of funding sources as departments in disciplines such as science, engineering and medicine, so parity of arts funding is necessary in teaching and learning and in “third strand” engagement, as well as in research. Institutional commitment comes from the top, so success is dependent on culturally informed and engaged senior managers within the universities who are prepared to place this agenda at the centre of institutional plans rather than on the periphery, allowing them to influence other constituent strategies from estates policy to event planning. The significance of individual and collective cultural contributions also needs to be recognised at all levels, with appropriate mechanisms for identifying and rewarding leaders and teams through the promotions exercise and other routes such as media recognition for both staff and student contributions to significant cultural activity.

Regional cultural development

As well as aligning national government agendas, joined-up thinking is necessary at regional level. There is no problem at present in finding strategies for regional engagement, whether from regional development associations, local government, cultural organisations such as the Arts Council, Creative and Cultural Skills (the sector skills council for the creative and cultural industries) or the Regional Cultural Consortia. What these strategies often lack, however, is an awareness of how organisations have different business drivers, how these impact on what they can do, how different strategies intersect and interact, and how they can then be transformed into clear and coherent action plans. Successful collaborations require a common purpose and identified mechanisms for engagement, and this is dependent on suitable identified fora for sharing approaches with appropriate cross-representation.
The time is ripe for a fruitful partnership between higher education and the cultural sector in the North East, for not only are several of the universities developing more explicit cultural strategies, with the appointment of individual cultural officers and the establishment of strategic external alliances and networks with artists, venues and businesses, but bodies like the Arts Council have also produced their own strategies for engaging with higher education, a recognition of the importance of universities that would not have happened a decade ago (Arts Council England, 2006). As mechanisms for engagement are developed, alongside strategies for co-investment that recognise the lack of equity in sector funding, they must be built, as in any successful co-operation, around mutual respect and understanding. And, again like any other form of collaborative enterprise, they require identifying of “project champions” – regional cultural leaders, entrepreneurs and ambassadors who understand the different languages spoken within education, government and the cultural sector and can interpret across these boundaries.

**Capturing “cultural value”**

In many ways cultural value is often intangible. The civic contribution is difficult to measure, although there are quality of life indicators. We need to identify clearer metrics and outcomes in relation to much of this activity. While these kinds of metrics have now been identified and accepted in relation to the wider regional impact of culture-led development and regeneration, they are still much less clearly defined at the institutional level.

Arts provision, of course, is often expensive: in the current climate of free entry to major museums and galleries, it is difficult to find ways, apart from shop sales and charging for some temporary exhibitions, of gaining income from visitors, and many of the more innovative programmes within the performing arts, especially involving contemporary repertoire, lose money rather than raise it. Much of the benefit from cultural assets is difficult to measure: a theatre or a museum may bring thousands of visitors onto the campus, from the under-fives upwards, but it is difficult to establish how many of those visitors apply years later to become university students as a direct result of those experiences. A potential medical student may make his or her final decision of where to study partly on whether a university has a strong theatre society or a first-class orchestra, not solely on the quality of the medical education, yet these extra factors are impossible to capture within normal admissions data.

Nevertheless, it should not be beyond the wit of major research institutions to develop new and more effective ways of measuring their own contribution to the quality of the life at institutional, regional, national and, indeed, international levels. Universities represent a large proportion of all European institutions that have survived since medieval times, and much of
this longevity has been due to their vital contribution to the social, economic and cultural developments that surround them. The new millennium has seen a willingness to acknowledge the value of culture as a major contributor to the quality of life and economic prosperity, and in the North East of England there are particular geographical and social circumstances that offer real opportunities for partnership between universities and cultural organisations throughout the region. It is a challenge that neither higher education nor its potential partners in the cultural sector can afford to ignore.

The authors:

Dr. Eric Cross
Dean of Cultural Affairs
Newcastle University
Faculty of Humanities and Social Sciences
7th Floor, Daysh Building
Newcastle upon Tyne NE1 7RU
United Kingdom
E-mail: eric.cross@newcastle.ac.uk

Helen Pickering
Executive Director
Universities for the North East
1 Hylton Park – Wessington Way
Sunderland SR5 3HD
United Kingdom
E-mail: h.pickering@unis4ne.ac.uk

Notes

1. *Staying Ahead* (The Work Foundation, 2007, p. 192), defines the creative industries as the following 13 sectors: advertising, architecture, art and antiques, computer games, crafts, design, designer fashion, film and video, music, performing arts, publishing, software, and television and radio. Together these industries accounted for 7.3% of gross value added in 2004 (the latest year for which figures are available). They grew by an average of 5% per annum between 1997 and 2004, compared to an average of 3% for the whole of the economy over the same period. Exports totalled GBP 13 billion in 2004, equating to 4.3% of all goods and services exported. Creative employment totalled 1.8 million jobs in summer 2005. This comprised just over 1 million jobs in the creative industries and a further 780 000 creative jobs within businesses outside these industries.

2. This figure is taken from the “Taking Part Survey”, a national continuous survey of participation in cultural activity through face-to-face interviews with approximately 29 000 adults living in private households in England, shortly to be published by DCMS.
3. Another recent DCMS report by Graeme Evans and Phyllida Shaw (2004) provides a series of evidence-based case studies from across the United Kingdom of culture’s contribution to regeneration, while a more focused regional study by Christopher Bailey et al. (2004) suggests that “successful culture-led regeneration is not about a trickle-down effect at all, but rather represents a counterbalance to broader processes of cultural globalisation”.

4. Luke Binns (2005) talks of similar concerns about the benefits of the cultural renaissance in the eyes of many Glaswegians; the suggestions that many residents living in run-down housing estates in areas of high unemployment and other social problems were left out of the picture reminds us that the true test of Gateshead’s transformation along the Quayside will be its impact in ten years’ time on the deprived housing estates less than a mile away.

5. For example, the work of Tina Gharavi, a film-maker based at Newcastle University and herself an Iranian refugee, with refugees and asylum-seekers.

6. The new Film and Digital Media Exchange, led by the University of Hertfordshire in partnership with Anglia Ruskin University, the University of East Anglia, Norwich School of Art and Design and West Herts College of Further Education, is developing strategic partnerships with leading players in this sector, providing human resources and business support to studios and their supply chains. It is focusing in particular on improving the culture of entrepreneurship, providing foresight intelligence, developing physical presence through Creative Enterprise Centres and working in partnership with Skillset, the sector skills council. See www.fdmx.co.uk.

7. According to a report from Creative and Cultural Skills (n.d.), over 94% of creative and cultural businesses within the sector have fewer than ten employees.

8. Newcastle University’s mission statement, for example, has an explicit emphasis on cultural development: “To be a world-class research-intensive university, to deliver teaching of the highest quality and to play a leading role in the economic, social and cultural development of the North East of England”. This has had a major impact on the institutional emphasis on cultural outreach and the investment in cultural infrastructure on campus. The university also created a new role in 2002 of Dean of Cultural Affairs, again headlining this aspect of institutional activity.

9. The recent appointment of a Cultural Development Manager, housed within Universities for the North East but funded by the Arts Council, is symbolic of this developing ethos of trust and partnership, as is the establishment of new fora at a national level to facilitate dialogue between the Arts Council and different university groups.

10. For example, the Audit Commission (2005) report Local Quality of Life Indicators gives just two generalised measures under the “culture and leisure” heading: “The percentage of the population within 20 minutes travel time (urban – walking, rural – by car) of different sports facility types; and the percentage of residents who think that for their local area, over the past three years the following have got better or stayed the same a) activities for teenagers; b) cultural facilities (for example, cinemas, museums); c) facilities for young children; d) sport and leisure facilities; and e) parks and open spaces.”
References


Audit Commission (2005), Local Quality of Life Indicators – Supporting Local Communities to Become Sustainable, www.audit-commission.gov.uk/.


Binns, L. (2005), Capitalising on Culture: An Evaluation of Culture-led Urban Regeneration Policy, Faculty of the Built Environment, Dublin Institute of Technology, section 5.

Bloomfield J. and F. Bianchini (2004), Planning for the Intercultural City, Comedia, Bournes Green.


The Dilemma of the Modern University in Balancing Competitive Agendas: The USQ Experience

by

Bill Lovegrove and John Clarke
University of Southern Queensland, Australia

The Australian government uses numerous strategies to promote specific agendas – including continued efforts to deregulate the higher education sector. These strategies comprise the reduction of government funding to universities in real terms to oblige institutions to seek alternative sources of income; the targeted deployment of government funding (including growth places and infrastructure funding); the use of reward-based incentives; the actual or threatened re-distribution of funding based on performance; competitive grants; and amending funding mechanisms to support desired behaviours. In addition, strategies not involving direct funding are also used through special policy provisions, the establishment of bodies and forums to promote issues; the publication of position papers and protocols; the publication of performance information or review outcomes; the employment of reporting and accountability processes and frameworks; and various approaches to promote, encourage or oblige sector restructuring.

A major thrust of the Australian government’s higher education policy is to encourage sector diversification through encouraging individual institutions to adopt their own clear and unique identities. This poses many challenges and opportunities for new generation regional institutions trying to position themselves in an increasingly competitive higher education market while continuing to meet their obligations and remain relevant to their local communities.

The University of Southern Queensland’s experience in pursuing its vision as a leader in open and flexible higher education is explored within the context of these potentially competing agendas.
Background – The University of Southern Queensland (USQ)

The University of Southern Queensland (USQ) is a non-elite, medium-sized regional university (enrolling 27,000 students) located in the State of Queensland on the east coast of Australia. The university’s main campus is in the regional city of Toowoomba, located 120 kilometres west of the state capital of Brisbane. There are also two smaller branch campuses – one on Queensland’s Fraser Coast and a new campus at Springfield in outer metropolitan Brisbane – and a partnership involvement in the Queensland College of Wine Tourism in the regional town of Stanthorpe near the Queensland-New South Wales border. Since the late 1970s the university has been a leader in technology-enhanced open and distance education, with up to 80% of its students studying off campus. As a regional university, USQ has obligations to serve its regional communities, maintain an appropriate breadth of study to satisfy local demand and regional needs, and provide a basis for regional economic and social development through meaningful engagement.

USQ’s antecedent institution was established in 1967 and developed as a college of advanced education during the 1970s and 1980s. The limitations on the recruitment of students from the local region and a mission that included responsibilities to serve the vast rural areas of southern and western Queensland pushed the college to expand into distance education – quickly becoming a leader in this area. USQ has maintained this acknowledged leadership position – as reflected in a number of prestigious awards, including being named Joint Winner of Australia’s Good Universities Guides University of the Year Award in 2000-01 for “developing the e-University”. The institution also built on this position to become an early and successful entrant into international education in the 1980s and, more recently, by establishing branch campuses as a basis for securing new markets.*

By virtue of its location outside of Australia’s larger cities, its background as a college of advanced education and its heavy involvement in flexible resource-based education, a high proportion of USQ’s student body may be

* For an introduction to USQ’s approach to open and flexible learning, readers are referred to the list of exemplary publications by USQ’s Deputy Vice-Chancellor (Global Learning Services) Professor Jim Taylor at www.usq.edu.au/users/taylorj/publications.htm.
categorised as non-traditional. The university is over-represented by people from groups that are otherwise under-represented in Australian higher education as a whole, particularly people from socio-economically disadvantaged backgrounds and people from rural and geographically isolated areas. Many USQ students are the first in their family to attend university. A high proportion of students are adults, often studying through distance education while employed, with the median age of students being over 26 years. The university also has significant populations of students from groups with special needs including Indigenous Australians, students from refugee backgrounds and people entering higher education after a history of disrupted schooling.

Change in Australian higher education

The impact on higher education of the economic, social, political and educational changes associated with globalisation, post-Fordist development and the rise of the information age is well documented (Drucker, 1994; Limerick et al., 1998; Marginson and Considine, 2000). In business terms, however, these changes manifest in a more deregulated, competitive and discerning higher education market; in modified student behaviours; and in revised requirements for learning and teaching. These changes are, in turn, associated with a major shift in the functioning of universities. Marginson and Considine (2000, p. 28) describe these trends in terms of the development of “enterprise universities”:

All Australian universities are now enterprise universities. The enterprise university joins a mixed public-private economy to a quasi-business culture and to academic traditions partly reconstituted, partly republican, and partly broken. This is not so much a genuine private business culture as a public sector variant in which certain of the conditions and techniques of business (such as competition, scarcity, marketing, goals defined in money terms) have been grafted on to existing bureaucracies now opened up to external pressures. ... In their political economy, enterprise universities sit somewhere between the public academic institutions they were and the private companies that some imagine them to be already.

As is the case in all developed countries, governments have served as major change agents for higher education development. The Australian government uses numerous strategies to promote specific agendas, with increasing sector deregulation featuring as a major goal by successive governments over an extended period. Strategies employed include the targeted deployment of funding based on specific criteria (including performance) designed to encourage institutional movements in particular
directions. In addition, governments seek to influence behaviours through structures not involving direct funding such as through special policy provisions, the establishment of key bodies or forums to promote particular policy agendas, the publication of performance information or review outcomes, and the employment of reporting and accountability processes and frameworks. Strategies to increase competition through encouraging private higher education providers and by allowing alternatives to the government funded places that have been the mainstay of Australian higher education – including allowance for full-fee undergraduates – have also been pursued. In addition, entrepreneurship and a stronger business orientation for universities have been encouraged. The planned reduction of higher education funding in real terms has obliged universities to seek alternative funding sources and to exploit the opportunities created by deregulation.

At the same time, the market has been changing radically. High employment rates, increased demand for vocational education and training sparked in part by a commodities boom, rising university costs for students, and an oversupply of government funded higher education places have contributed to a softening of demand for higher education over the last few years in Australia. This, coupled with a decline in growth in Australia’s traditional overseas market, has resulted in intense competition among Australian universities for students. The situation is exacerbated by changed student enrolment patterns and fluctuating demand arising from high levels of student employment, increased study options, and the growing influence of “gap year” behaviours.

For USQ, the changed enrolment patterns of its student body create severe challenges. For example, the enrolment density – that is the mean course-load of students per semester – has almost halved over the past six years and is now approaching 1, a quarter of what would strictly represent a full-time load. Some 41% of USQ students enrol in only one of USQ’s three semesters per year, while just 36% of students enrol in the two main semesters (autumn/winter and winter/spring) each year. This trend is a result of the high level of part-time study undertaken by USQ’s students, exacerbated by increased student employment and a more conservative attitude to enrolment as costs to students rise. USQ’s non-traditional student body is particularly susceptible to pressures, which has led to a reduction in the number of courses in which students enroll per semester. For example, as a high proportion of USQ’s students are adults studying while employed, they cannot defer the debts incurred through Australia’s income contingent loans scheme – the Higher Education Contribution Scheme – and so they tend to enrol conservatively; while the high proportion of USQ’s students from disadvantaged backgrounds are more influenced by rising student costs, are more likely to devalue higher education and defer to other options and/or are
more likely to seek part-time work while studying – all of which contribute to a lowering of enrolment density. Hence, although USQ has managed to increase its market share for seven successive semesters, the need to recruit an increasing number of students to meet target load is resulting in net underenrolments. The declining student enrolment density means that while USQ is increasing its market share, its enrolments are actually declining.

The above example reflects of the difficulties that the changing higher education operating environment can create for the smaller and less prestigious regional universities in Australia. Sector deregulation, increased competition for students, changing student enrolment patterns and interventionist government policies have resulted in a series of challenges for these universities, manifested as:

- tighter budgets and greater demands on resources;
- greater competition for students and declining enrolment density – meeting enrolment targets is increasingly difficult;
- increased scrutiny of performance in learning, teaching and research, including through published league tables;
- increased emphasis given to business best practice;
- growing expectation for increased impact and relevance.

A major thrust of the Australian government’s higher education policy is to support increased sector diversification through encouraging individual institutions to adopt their own clear and unique identities. This agenda creates a certain degree of anxiety, particularly for universities which sit outside the traditional mould. However, while posing significant challenges for new generation regional universities, the government’s diversity agenda also creates significant opportunities. At the very least, universities are obliged to take action to address the challenges and attempt to exploit the opportunities that the changing higher education operating environment affords – moving towards becoming enterprise universities. However, for USQ, the enhanced business orientation that this movement implies must co-exist with the institution’s continued obligations as a regional university to engage meaningfully and productively with its communities and to provide educational opportunities for a diverse student constituency.

The need to balance competing agendas is, of course, a dilemma that all modern universities face to a greater or lesser degree. Watson (2003) notes that the impact of the expanding expectations on higher education has re-created a series of dilemmas for universities including: “being at once ... competitive and collegial, private and public, excellent and equal, and entrepreneurial and caring”.
To position itself to more effectively address these competing agendas – prospering as a sustainable, efficient business enterprise while fulfilling its social and community obligations – USQ has undertaken what it has labelled the Realising Our Potential Initiative.

Enhancing the business: USQ's Realising Our Potential Initiative

USQ's Realising Our Potential Initiative has been undertaken to address the core challenges of tighter budgets and increased competition for students by pursuing several related business strategies, namely:

- forging a unique identity – the USQ “brand”;
- striving for consistent excellence in learning and teaching – optimising the whole student experience and the achievement of desired graduate qualities as a basis for achieving competitive advantage;
- improving quality and student demand, retention, progression and completion;
- optimising operations in terms of efficiency, focus, quality and impact;
- building capacity.

With its strong background in open and distance learning, USQ has found itself well placed to maintain a leadership position in technology-enhanced learning and in employing “Fleximode” – that is, providing blended learning experiences to all students through cutting-edge educational technologies and resources that can be accessed from anywhere, coupled with an emphasis on building meaningful relationships with students. Ensuring a high quality experience for students is key to USQ's approach and a fundamental principle underlying its future sustainability.

From its background as a college with a high proportion of non-traditional students, USQ was an early adherent to student-centred approaches to learning and teaching. One of USQ's singular strengths relates to the development of meaningful relationships with students, providing the basis for enhancing student retention through forming connection with students, ensuring student “fit” and offering flexible approaches that meet students' needs (Lovegrove and Clarke, 2005). These features lent themselves to creating a strong USQ brand. Market research identified a number of core themes that stakeholders associated with USQ – “family” (as an expression of the USQ community), “support” and “challenge”. Coupled with USQ's acknowledged strengths in technology-enhanced and flexible learning, this led to developing “Brand USQ” based on “Fulfilling lives through flexibility for students regardless of location”.

In order to delivering on the USQ brand in the challenging higher education market, the university has undertaken a suite of major projects...
aimed at repositioning itself. The first plank of the Realising Our Potential Initiative has involved a number of major projects to review the university’s overall approach to learning and teaching. This has centred on re-examining the institutional academic programme portfolio as part of a wide-ranging “Academic Program Rationalisation” exercise. Previous approaches to flexibility at USQ left the institution with a significant number of programmes that suffered from low enrolment and/or that failed to return a positive financial contribution. Academic programme rationalisation has involved eliminating non-productive programmes in order to free up the resources currently invested in them. This process has been informed by a sophisticated activity-based costing and management process that the university has built up over the past three years. Clearly, it is a major challenge for the institution to reduce the overall size of its academic programme offerings while maintaining the number of student course enrolments and ensuring an exciting and attractive programme portfolio. Hence the programme rationalisation process is occurring in conjunction with projects that involve reviewing all aspects of learning and teaching to streamline processes and to enhance learning effectiveness through “Academic Program Revitalisation”. Brand USQ places particular emphasis on optimising the university’s approach to “Technology-Enhanced Learning” through Fleximode, where the boundaries between on- and off-campus study are increasingly disappearing. USQ must be recognised as a leading teaching university through offering flexibility for students; to this end the university is building its reputation in open, distance and blended learning through such strategies as becoming Australia’s first member of the OpenCourseWare Consortium (2007) and through building research strengths in this area through USQ’s Learning Futures Innovations Institute.

A second plank for the Realising Our Potential Initiative has the aim of achieving a “new level” of quality of service to students. The “Student Management Project” involves a major revamp of student management centring on customer focus, assured service standards and efficiency of operations. The outcome is more integrated, co-ordinated and centrally planned approaches to student management based around a “one-stop shop” model and the pooling of staff resources.

The third plank of the initiative involves optimising efficiency in administrative services and systems in response to tighter budgets through the “Corporate Services Project” – specifically rationalising Financial Services and Human Resource Services – and the “Facilities Management Project”. Efficient operations are critical to USQ, which has a high proportion of its operating expenses tied up in salary costs. Optimising its management of resources to free up resources that enable the university to pursue flexible approaches based on time, approach and content mean that processes need to
be streamlined, focused, effective and staff friendly – too often, bureaucratic processes work against staff rather than for them. USQ views its efficiency initiatives in terms of how processes can be changed to better support staff. Professional development to ensure a committed workforce with a focus on the Student Learning Journey is also a key element.

The following table summarises the Realising Our Potential Initiative.

Table 1. Components of USQ’s Realising Our Potential Initiative

<table>
<thead>
<tr>
<th>Projects</th>
<th>Project Co-ordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First plank: Renewing and revitalising learning and teaching</strong></td>
<td>Academic Program Rationalisation</td>
</tr>
<tr>
<td></td>
<td>Academic Program and Curriculum Revitalisation</td>
</tr>
<tr>
<td></td>
<td>Technology-Enhanced Learning</td>
</tr>
<tr>
<td><strong>Second plank: Achieving a “new level” of quality of student service</strong></td>
<td>Student Management Project</td>
</tr>
<tr>
<td><strong>Third plank: Optimising efficiency and effectiveness of administrative support services</strong></td>
<td>Corporate Services Project:</td>
</tr>
<tr>
<td></td>
<td>● Financial Services</td>
</tr>
<tr>
<td></td>
<td>● Human Resources Services</td>
</tr>
<tr>
<td></td>
<td>Facilities Management Project</td>
</tr>
</tbody>
</table>

The following features have been critical to the success of the Realising Our Potential Initiative:

- Conducting this initiative has been dependent on considerable groundwork undertaken to put core systems in place. The Realising Our Potential Initiative has forced the university to gain a thorough understanding of its current processes and systems and their effectiveness (through audit, rigorous statistical analysis and benchmarking), markets (through market research and analysis) and costs (through the systematic employment of activity-based costing). The initiative also relies heavily on the excellent planning and quality framework that the university has in place which is grounded in evidence-based approaches utilising sound statistical analysis and information management.

- The initiative is built on the university’s close relationship with its communities. Conducting forums which involved external stakeholders to engage the community in the change process was an early and important element in the initiative’s planning and development.

- The initiative involves repositioning the entire organisation. Without a co-ordinated and integrated all-of-university approach that comprehensively captured all elements of the USQ’s operations, the outcomes would inevitably be compromised by non-reformed unintegrated elements.
● Each project has been led by a member of senior management with the requisite authority and knowledge of the institution and its strategic priorities to manage projects of such scope and complexity.

● All project leaders serve as members of the initiative's overall governance group which has met regularly to oversee and drive the initiative, work through any problems or log-jams that arise, and ensure overall coordination.

● Each project has utilised external consultants as a means of ensuring appropriate expertise and objectivity, as well as accessing a wider pool of ideas, experiences and benchmarking information than that available within the institution itself.

● An additional specialist consultancy project has been in place to advise the vice-chancellor and project leaders directly on matters relating to the financial and human resource implications of any recommendations arising from the projects.

● Implementing a rigorous communications strategy has been particularly emphasised to ensure that all stakeholders understand and are “on board” with the processes underway. This is perhaps the most difficult area to manage effectively, needing to capture a wide range of both internal and external stakeholders and to address such issues as a natural resistance to change, fears associated with the implications of change, and the effect of rumour and hear-say. Strategies have involved the use of multiple channels of communication; the wide circulation of an issues paper with calls for input; planning retreats with wide representation; numerous public forums conducted with external stakeholders, across the institution and in individual faculties/sections; focus groups; and the considered use of newsletters and other forms of media.

Indicators of success of the strategies described will include positive financial contributions from all programmes, streamlined processes and services, increased market share, improved student entry standards, an increase in student applications, improved student performance and retention, the consistent meeting of load targets, improved student satisfaction, and improved institutional performance in national rankings. Evidence of success in some of these areas is emerging, particularly in relation to market position and student enrolment, in much (but not yet all) of the overall graduate experience and in the streamlining of processes. Many others will take some time to turn around. However, success in all of these areas is critical to USQ's future sustainability.
Capacity building

A critical consideration during times of cost-cutting is not only to maintain standards but to actively maintain a forward momentum for development. Perhaps the greatest challenge for vice-chancellors of regional universities in Australia is to continue to build capacity during times of economic restraint. An example of where this has occurred is USQ’s move to open a new branch campus at Springfield on the outskirts of the Queensland state capital of Brisbane. The new campus provides USQ with a footprint in one of Australia’s largest future population growth corridors and hence represents an important strategy for future enrolment growth. It has also provided a platform for introducing exciting new programmes with significant future potential, particularly USQ’s first Law programme. However, the start-up capital and infrastructure costs are, of course, significant and put an immense financial strain on the institution over the initial years. The university has been able to share some of the risk and start-up costs through arrangements with private developers but such enterprises demand careful management and put an added emphasis on the need for cost-effectiveness, efficiency and effective quality management across the entire organisation. The university has also sought to improve the integration between its financial management and strategic planning processes, streamlining its budget process and improving financial forecasting.

Balancing USQ’s enhanced business focus with its commitment to its regions

The question arises of whether USQ’s adoption of hardened business principles and its increased emphasis on such core business considerations as market position and level of student enrolments has lessened the university’s commitment to meeting other aspects of its mission, e.g. responding to the need to enhance its contribution to the economic, social and cultural development in the regions. There is certainly a real risk of this occurring. Emphasising the financial bottom line and competitive market position, which unquestionably is increasingly becoming the norm in Australian universities, may potentially detract the university from fulfilling its responsibilities to its regions. However, several trends serve to assist USQ to counter this tendency.

An important aspect is that USQ has taken the approach to base its business reforms and entrepreneurship on excellence. Brand USQ is based on “Fulfilling lives through flexibility” – meeting the needs of the diverse range of students that encompass its traditional student constituency through excellence in resource-based blended learning, building relationships with these students to increase student retention and performance, and improving
student management. Hence the university's business strategy is linked directly with enhancing educational provision for the people in its regions. Optimising learning and teaching practice also serves to improve the educational outcomes for the high proportion of USQ's student constituency that come from disadvantaged backgrounds. People from socioeconomically disadvantaged backgrounds remain considerably under-represented in Australian higher education, and the educational prospects of people from rural and geographically isolated areas have been severely compromised over the past few years by a protracted nationwide drought. The contribution of universities like USQ – that is over-represented by the socioeconomically disadvantaged as well as by the rural and isolated residents – represents a significant national contribution which, again, is grounded in USQ's pursuit of excellence in learning and teaching and improved services to students.

USQ also sees its significant involvement in international education – which represents an important business strategy for diversifying its income sources and increasing revenue – as helping serve its regions. This occurs by bringing overseas students into the local regions, significantly contributing regional economies and linking the regions with the international knowledge economy. There is certainly no contradiction in USQ being both a regional and a transnational university as each of these aspects of its character serves to promote the other (Lovegrove and Clarke, 2005).

Similarly, USQ's Research Strategy centres on developing its research strengths in areas that are of direct relevance to the regions. An important argument for USQ retaining a strong research presence relates to the capacity that this provides for the university to better serve and connect with its local regions. Examples of USQ's community-based approach to research include:

- **USQ's Australian Centre for Sustainable Catchments and the National Centre for Engineering in Agriculture**, in conjunction with industry and other university partners, have developed technologies that provide substantial economic and environmental benefits for rural industries. Projects include:
  1. controlling evaporation losses from large storage dams using chemical monolayers;
  2. developing improved methods for applying irrigation water to crops that will improve water use efficiency and reduce environmental impacts;
  3. developing machine vision systems for quantifying fodder quality;
  4. developing image analysis systems used for species identification, weed identification, yield and condition monitoring of plants and crops, and water monitoring; and
  5. testing methods of improving water quality and reusing waste water.

- **USQ's Public Memory Research Centre** is involved in a range of regional research projects designed to capture and store the wealth of memories and experience that are in danger of being lost by local communities. These
“public memories” are an important part of community identity which can help groups to endure difficult times. The outcomes will include archived digital stories accessible through the Internet, and touring visual arts, theatre and other multimedia productions.

- Researchers from USQ’s Faculty of Business in collaboration with Queensland Health are investigating ways of using informatics to improve the care of aged persons who are living at home (called the Smart Home Initiative) and ways of using technology to offer better medical services to people living in rural and remote settings.

To sum up, the way that USQ has responded to the challenges presented to it as a post-modern university actively build on and enhance its strengths as a regional university. USQ is conscious of the fact that remaining true to its mission is a major element of the university’s future sustainability and continuing success.

Conclusion

Traditionally, higher education was accused of being slow to change and unresponsive to its operating environment. However, for at least the past two decades, universities have been in a continual and dynamic state of reform. The adage that “the only constant is change” and the operating principle that “business as usual is not an option” are now rammed home to vice-chancellors on every day of their working lives. Clearly, achieving the significant reform required demands, multiple strategies and significant effort across the entire institution. Change does not occur easily or without cost or some pain; but it also creates new opportunities that should be exploited to the fullest. It is important that change is well informed by solid data, rigorously planned, well managed and appropriately resourced. Effective communication with all stakeholders is a key element, as is the ability for the institution to “hold its nerve” while the change process is underway.

Enterprise universities are now a fact of life in Australia. However, improved business practice, a greater efficiency of operations and a concern for the bottom line need not detract from universities’ responsibilities to their communities or regions. Change strategies based on business excellence and cost-effective operations that remain true to the institutional mission should position the university to approach its community engagement more professionally and result in activities that are more relevant to the community and have a higher impact.
The authors:
Professor Bill Lovegrove
Vice-Chancellor and President
University of Southern Queensland
Toowoomba, Queensland 4350
Australia
E-mail: geise@usq.edu.au

John Clarke
Executive Officer to the Vice-Chancellor
University of Southern Queensland
Toowoomba, Queensland 4350
Australia
E-mail: clarke@usq.edu.au

References


Benchmarking University Community Engagement: Developing a National Approach in Australia

by

Steve Garlick and Anne Langworthy
University of the Sunshine Coast and Swinburne University of Technology, Australia

This article provides the background and describes the processes involved in establishing a national approach to benchmarking the way universities engage with their local and regional communities in Australia. Local and regional community engagement is a rapidly expanding activity in Australian public universities and is increasingly being seen as part of the universal quality assurance assessment process. An initiative of the Australian Universities Community Engagement Alliance (AUCEA), the benchmarking framework was developed over almost three years and involved considerable consultation and testing. The framework comprises an institutional questionnaire, a partner perceptions survey and a “good practice” template. The instruments were tested in a pilot of 12 AUCEA member universities and will be implemented in all 33 AUCEA member universities in late 2008. Comparative results will be available early in 2009. The framework will assist universities and their community partners to improve their contribution to society and the environment through mutual knowledge exchange, learning and enterprising action.
The environment for university and community engagement in Australia

AUCEA

The last decade in Australia has seen a significant increase in the connections universities are making with their local and regional communities. To provide support to this, the Australian Universities Community Engagement Alliance (AUCEA) was established in 2003. The AUCEA develops tools and encourages networking, dialogue, learning and scholarship to facilitate meaningful connections between its member universities and the local and regional communities in which they are located. It also organises an annual national conference, publishes an online journal (*The Australasian Journal of University Community Engagement*), produces an online newsletter for member institutions and runs a visiting scholars programme. The AUCEA is a voluntary association with membership to date comprising 33 of the 38 public universities in Australia.

Since 2005, the AUCEA has been designing a benchmarking framework to help member universities evaluate their community engagement activities. An initial planning document was prepared, several membership workshops held and a working group established. An institutional questionnaire, a partner survey and a “good practice” template were prepared for pilot testing among 12 member institutions. A full evaluation for all member universities and their partners will take place late in 2008. It is planned that the evaluations will be carried out nationally on a regular basis following this.

The community engagement benchmarking framework developed in Australia has a dual purpose. First, it enables universities to make ongoing comparisons with other universities throughout Australia and, through this, to adopt “good practice” continuous improvement where relevant to their circumstances, while retaining individual institutional performance confidentiality. Second, it provides the core framework elements to enable each university to tailor a comprehensive local benchmarking process, consistent with their particular mission and community context, within an overall institutional quality management agenda.
Third steam funding

The pressure of globalisation and the recognition of the importance of knowledge and expertise in this context have in many countries seen the growing importance of the university in building a viable regional and local community (Goddard, 1997; Arbo and Benneworth, 2007; OECD, 2007). In Australia this growing interest, together with a strong programme of campus regionalisation (Garlick 1998, 2000; Garlick and Pryor, 2004), led to a policy discussion among a number of interest groups about the need for an additional or “third stream” of university funding, alongside education and research funding (AVCC, 2005; BHERT, 2006; FASTS, 2006). AUCEA and the benchmarking project however saw community engagement not as an additional or separate university function to mainstream research and education, but as a way of knowledge working that embraced full university scholarship within existing education and research funding streams (see www.aucea.net.au).

For the AUCEA, community engagement by universities is underpinned by two factors. First, some portion of academic goals is best achieved through collaborative knowledge-based relationships with the local and regional community in which they are located. Second, universities as publicly funded, autonomous, and spatially distributed institutions of learning and knowledge have a responsibility to ethically contribute to the “public good”. In creating human capital and carrying out research and innovation they should play a role in major world issues that resonate in their local and regional communities (Boyer, 1996; Garlick and Palmer, 2007, 2008). Quadrant I in the schematic Figure 1 best represents the AUCEA approach to this sphere of university activity.

Figure 1. University purpose and community focus
Quality audit

The Australian Universities Quality Agency (AUQA) carries out regular institutional audits of university quality (www.auqa.edu.au), recently including universities' community and regional engagement responsibilities. The mission of AUQA is to undertake periodic audits of higher education institutions so as to report on the relative standards of the Australian higher education system and its quality assurance processes.

University engagement responsibilities with their local and regional communities will increasingly feature in the regular quality audit assessments by AUQA. The benchmarking work undertaken under the auspices of AUCEA, and discussed in this article, is likely to form a basis for future institutional quality audit work of AUQA.

Institutional viability

The last ten years have seen a regionalisation of university campuses throughout Australia facilitated by an equity policy of government to enhance participation in non-metropolitan and peri-urban areas (Garlick, 1998, 2000; Garlick and Pryor, 2002). There has however been research (Stevenson et al., 1999) over recent years that has dispelled the effectiveness of such a singular approach. Policies that do not cause universities to go beyond a “just being there” approach to their spatiality will not achieve their institutional viability objectives. It is also unlikely they will have any positive knowledge-based impact on the viability of the community in which the campus is located.

Simple university location without engagement has not been a recipe for regionalised campus viability. Many universities have more recently therefore sought to strengthen their local and regional connectivity to ensure their programme offerings rate highly in local student preferences, their programmes and graduates are consistent with business and community needs, and there are local research partnerships and resource sharing to minimise operating costs.

Research quality framework

The final area with the potential to further influence the increased take-up of community and regional development engagement initiatives by higher education institutions in Australia relates to increasing policy pressure by government for university research funding to demonstrate meaningful and purposeful impact in business and the community (Bishop, 2006). What policy funding format this will take with a new federal government is still to be determined, however it is likely that assessing the impact of community and regional engagement processes will figure in this.
Measuring engagement

Why measure?

The practice of benchmarking can have two objectives. First, it can be used as a means for assessing the quality and cost performance of an organisation’s practices and processes in the context of industry-wide or function-specific “good practice” comparisons. This is usually carried out as part of an organisation’s accountability responsibility to an accrediting, funding or regulatory authority. Second, and more fundamentally, benchmarking can be used as an on-going diagnostic management tool focused on learning, collaboration and leadership to achieve continuous improvement in the organisation over time.

The last decade has seen a growth in performance benchmarking in the higher education environment as governments have sought increased quality in teaching and learning, greater industry applicability in research, greater efficiency in institutional operation, and greater prudential responsibility for the public funds provided (Garlick and Pryor, 2002).

Universities receive considerable public funding to deliver on their education, research and innovation responsibilities. Funding agencies want to be assured that funding is being spent in areas that are consistent with national efficiency and equity priorities. Quality outcomes are therefore important. Universities are also one of the few institutions with the critical mass, spatial presence, focus on knowledge creation and distribution, and international connectivity to contribute to the sustainability of the communities in which they are located. Communities also want to be convinced that a university presence is a net positive contributor to their areas and not one that contributes to a “brain drain” of human capital and diminished competitiveness. University and community partnerships are important.

However, for the most part, university budgets are tight and resource allocation decisions need to be based on where the best returns on outlay, including broader returns to the “public good”, can be obtained. A strategy of community and regional engagement will only be resourced if the returns on outlay are sufficient.

Until now, there has been no comprehensive and ongoing performance assessment framework in place in Australia for community and regional engagement (Garlick and Pryor, 2004; Garlick and Langworthy, 2004).

Types of measurement

Generally universities have undertaken three broad types of assessment of their regional and community engagement. These are: a) guided self-evaluation
with expert peer review; b) metric assessment based on an agreed schedule or typology of measures; and c) a hybrid of a) and b).

**Self-assessment and peer-review**

The first way to view benchmarking in the university situation uses normative terms like “collaboration”, “organisation learning”, “inclusiveness”, “reflection”, “review”, “leadership” and “improvement”. This way is about connecting up relevant stakeholders both within and outside the institution in such a way that leads to knowledge exchange about why, what, where and how improvement might occur. Recent performance assessment of university contribution to regional development by the OECD (2007) is an example of a comprehensive application of this approach (www.oecd.org/edu/higher/regionaldevelopment). Other examples of this kind are those regularly undertaken and published by The Finnish Higher Education Evaluation Council (FINHEEC) (see www.finheec.fi) for the engagement between universities and their local communities.

Self-assessment and peer review processes deliver informed points of view about what is working well and where improvement can be made. They are mostly qualitative, based on the expertise of the reviewers.

There are advantages and disadvantages of the self-evaluation and peer review approach to benchmarking the university’s contribution to regional and local communities. An important advantage is that it enables a learned process between the reviewer and the reviewed and allows the acquisition of more intelligence based on probing questions by knowledgeable and skilled interviewers. Use of a consistent peer-review team and interviewing template potentially make cross-regional and cross-national evaluative comparisons possible. A further advantage is that it enables a focus and connection with key community objectives, rather than an assessment framework that sits outside a specific set of articulated community priorities. The disadvantages are that reviewers may be influenced in their assessments by their home higher education system and culture, there may be questions about methods of group decision making, and so on.

**Framework metrics**

A number of frameworks have now been developed with a considerable metric component that focus on the engaged relationship between universities and their regional and local communities (see Charles and Benneworth, 2001; Gelmon, 2001; Kellogg Commission, 1999; Committee on Institutional Cooperation, 2005; New Generation Universities, 2005). In most cases, consultation (with varying degrees of thoroughness) underpins the structuring of the framework itself. The advantages of such approaches are that they more
readily enable comparative study across institutions, regions, cultures and systems, which is attractive to funding agencies. The disadvantages are that they rather tend to provide a static framework based around the nature of the institutional partnership with the community and are not always operationally connected to the achievement of long term core institutional or “public good” objectives. It is also possible such approaches do not offer a learning framework that enable improvement based on dialogue and the exchange of knowledge.

Such approaches tend to emphasise short-term performance assessment rather than focus on long-term improvement, and tend not to join up functional areas through learning about improvement, thereby limiting longer run commitment to implementation.

The AUCEA benchmarking project

**Background**

The AUCEA benchmarking discussion began at the alliance's national conference in 2005 where the disparate understandings and needs of member institutions where identified. In 2006 a discussion paper which drew on other experiences, *Assessing University Community Engagement* (Garlick and Langworthy, 2006), was the subject of a workshop for all AUCEA member universities. Over the following 12 months a working group of 12 member universities developed the benchmarking framework and its instruments, and undertook a pilot benchmarking exercise in 12 institutions and their communities.

A hybrid approach was taken in the AUCEA benchmarking framework based on a balance of mutual dialogue, reflective learning and qualitative self-assessment, as well as quantitative data that are readily available and indicative. The approach balanced short- and long-term assessment considerations recognising the need to regularly report to partner and interest groups and the need for a long-term view of the way universities meaningfully contribute to society and the environment locally, regionally, nationally and globally. The approach also sought to balance the need for measures and targets that address both the process of partnership building and the progression toward the intended outcomes.

**Benchmarking principles**

Based on member consultation and the literature, the following two principles guided the construction of the benchmarking framework:

- It should assist the university and its community partners to improve their contribution to society and the environment through mutual knowledge exchange and action.
The process of engagement between universities and their communities is a learning process where all participants see themselves as learners.

**Framework instruments and processes**

**Goals, strategies and measures**

Five overarching community engagement goals were identified as being common to all university circumstances, irrespective of structural diversity and stage of development. The five goals are:

- to facilitate informed debate and dialogue in the community on issues of local and global importance;
- to ensure that university governance, management and administration processes support effective community engagement;
- to ensure the university is accessible, outward reaching and responsive to its communities;
- to ensure the social, environmental, cultural and economic value of research to the university’s communities;
- to design and deliver high quality teaching and learning that responds to community needs and produces graduates who are ethical, employable and engaged citizens.

Eighteen strategies and supporting performance measures were aligned to the five goals. The measures were both quantitative and qualitative, with the qualitative measures populated through a convergence of the qualitative measures in both the institutional questionnaire and the partner perception survey.

**Filters**

To assess the reasonableness of each identified measure, a series of filters was used before their final selection. The filters covered the following broad areas:

- relevance and applicability;
- efficiency and cost of collection;
- comparability across institutions, communities and over time;
- transparency and auditability;
- balance between qualitative and quantitative;
- replicability.
Institutional questionnaire

The institutional questionnaire required both quantitative and qualitative responses to the community engagement role of the university. The quantitative data were identified to be in areas that may either already be collected for other purposes, or could quite easily be added to other data gathering processes. The qualitative data were based on a four-point self-assessment scale reflecting the degree of engagement, and covered areas such as structural support, support for dialogue and partnership among staff and students, support provided through university governance and management arrangements, university accessibility, and the role of teaching programmes and research in fostering engagement. A university-wide approach to determine this data in the individual institution assessment process was recommended to ensure a consensus view. The questions in the institutional survey broadly equated with the goals outlined in the framework document.

Partner perceptions survey

Each university was asked to nominate 15 community partners that could complete an anonymous questionnaire online about the nature of their engagement relationship. This included ten longstanding and five new community partners. The questionnaire comprised a five-point Likert scale describing the relationship with the university in terms of university accessibility, communication, stewardship, participation, relevance and leadership. The questionnaire also included two open-ended questions asking for an overall assessment of the value of the relationship with the university.

“Good practice” case examples

Each university was asked to complete a “good practice” template for what they considered to be examples of their three best community partnerships. The template asked for a description of the project, its benefits, the role of partners, communication strategies, lessons leant, quantitative and qualitative performance measures, and success factors.

Pilot and final implementation

A six month pilot of the various instruments was carried out among 12 diverse member universities from November 2007. The aim of the pilot was to identify where revisions needed to be made based on institution and partner feedback, and to gather the benchmarking data from the instruments to assist with the design of the full comparison framework. The final version of the benchmarking framework package is being launched at the AUCEA National Conference in July 2008.
AUCEA will manage the data assessment, portrayal of benchmarks and the bank of “good practice” initiatives to encourage sharing, learning and improvement. The first full cycle of the benchmarking framework is expected to be completed at the end of 2008 with comparative results available from early 2009.

Challenges

One of the most sensitive matters in constructing the university and community engagement benchmarking framework was ensuring confidentiality of results for individual participants while at the same time providing a framework that will encourage learning and improvement through co-operation. There will be no “league ladder” approach in the portrayal of the results.

A second challenge has been to balance the short-term performance assessment reporting required by regulatory and funding agencies with the long-term need to contribute to better outcomes globally and locally.

A third issue for resolution was how institutional and community diversity should be reflected and allowed for in benchmarking comparisons and how structural categorisations such as institutional age, size and location can be analysed through time.

Finally, it is recognised that the benchmarking framework needed to form part of and be informed by other university quality assurance frameworks.

Conclusions

The development of an agreed community engagement benchmarking framework for Australian universities will be fully in place by the end of 2008 with the first comparative analysis available from early 2009. This should assist in building “good practice” sharing, learning and improvement among universities and their communities in the way they mutually contribute to global and local priorities through knowledge exploitation.

The authors:
Professor Steve Garlick
Professor of Regional Engagement
University of the Sunshine Coast
Maroochydore DC Queensland
Australia
E-mail: sgarlick@usc.edu.au
Anne Langworthy
Director
Centre for Regional Development
Swinburne University of Technology  
Melba Ave, Lilydale  
Australia  
E-mail: ALangworthy@groupwise.swin.edu.au

References


Garlick, S. and G. Pryor (2004), Benchmarking the University: Learning about Improvement, Department of Education Science and Training, Canberra.


New Generation Universities (2005), Third Stream Funding: Funding Universities for Engagement in the Third Millenium, paper submitted to the Australian Vice Chancellor’s Committee on behalf of the New Generation Universities, Canberra.


Societal and Economic Engagement of Universities in Finland: An Evaluation Model

by

Jari Ritsilä, Mika Nieminen, Markku Sotarauta and Jukka Lahtonen
University of Jyväskylä, VTT Technical Research Centre of Finland and University of Tampere, Finland

This paper is based on the work of an expert team invited by the Ministry of Education of Finland to develop criteria and an evaluation framework for societal and economic engagement for use in university performance management. The paper maps out possible indicators for the societal and economic engagement of universities in the light of national and international examples. Finally, it presents a proposed framework for assessing the societal and economic engagement of universities and a possible set of outcome measurements which take due account of the major factors governing strategic planning and resource allocation.

The model presented in the paper for evaluating the societal and economic engagement of universities seeks to take into account the different circumstances in which individual universities operate and their strategic choices, with due consideration for comparability and national objectives. The goal underpinning the model is to strengthen the autonomy of the universities. At the core of the assessment model are five “assessment baskets”: 1) engagement in innovation activities, 2) engagement in the labour market, 3) engagement in socio-ecological development, 4) engagement in the regional environment, 5) engagement in social debate.
Introduction

Societal engagement is a major and challenging dimension of the activities of research universities. Although the impact of education and research has been the subject of numerous research papers, the evaluation of societal engagement has remained a challenge. One reason for the difficulties in evaluating societal engagement is that the impact of research activity is often indirect in nature. As literature on the economic impact of research has pointed out, the key influences through which this impact is channelled are education and the increase in the stock of information. As knowledge on the societal engagement of universities and its importance have increased, new tools and activities to intensify societal engagement have become necessary.

The evaluation model presented in this paper is based on the idea that universities should be evaluated on their core tasks: education and research. In other words, the primary measurement focus in the evaluation process should be the extent to which their research and education activities are integrated with society. This implies that research projects carried out with external funding or projects aimed at commercialising research results should not overwhelmingly direct the evaluation or the allocation of resources, although these are both important objectives in themselves.

A crucial aspect of the model for evaluating the societal engagement of research universities is that it combines central government and university-specific objectives. Universities have their individual objectives and strategies but, at the same time, are part of the national university system which has its own national objectives. An evaluation of their interaction with society has to take account of objectives and needs at both levels. Combining both requires close interfacing and co-operation between the central government and the universities.

In the model proposed here, university-specific and national-level aspects have been combined by using a system of “baskets” of carefully selected indicators. In order to take national-level evaluation needs into account, these baskets are determined nationally. They are then weighted by the universities, according to their individual objectives. The differing operating circumstances of the universities are therefore taken into account as well. It should be stressed that this model is partly theoretical in nature and thus includes a variety of components, some of which may be not be relevant in
practice. Therefore, before it is actually put into practice, the model will likely require some adjusting.

The paper is organised as follows: we first discuss some recent evaluation studies and compare our model to others. Secondly, we introduce in more detail the structure of our model, which is based on “assessment baskets”. Next, we present the model for calculating university-specific indices. Lastly, we give our conclusions.

International background

Recent reports on the evaluation of social interaction and societal engagement of universities from Canada, the United Kingdom, the United States and a joint research project conducted by the OECD mention the complexity of the issue. These international reports suggest several potential indicators which can be used in the evaluation; some of these indicators are based on surveys while others can be gathered from statistical data registers. We have drawn on these international examples in building our own model. We have also attempted to modify the indicators suggested in the literature to better suit the evaluation of the system as a whole, rather than simply evaluating individual universities.

While the international reports provide a good starting point for compiling the model, it is not possible to adapt them directly to the Finnish context. First of all, the social environments differ in many ways. Many of the international evaluations are geared towards a single university, a specific sector (e.g. the model dealing with commercialisation in Canada) or a particular region (e.g. the OECD’s evaluations of regional effectiveness). Second, the models presented in the earlier studies have not been able to link the whole system perspective and the individual university perspective together in the same model. Although the United Kingdom’s evaluation framework can be considered the most comprehensive of the models surveyed, it does not attempt to define a standardised combined metric for social interaction. Third, the previous models are mainly based on either survey data or register data. No attempt was made to correlate different types of statistics. Our model contributes to the literature on the above points and, at the same time, utilises the experience gained from that literature.

Growing interest in the effectiveness of research and development (R&D) activities and education has brought with it its own difficulties. In the sphere of innovation research, for instance, several projects have attempted to describe the effectiveness and mechanisms of R&D activity: see Salter and Martin (2001) for a survey; and, for example, Cohen et al. (2002); Beise and Stahl (1999); Mansfield (1995). However, developing unambiguous, reliable and easy-to-use indicators has proved difficult. For example, it is hard to estimate the
economic effects of the contribution of publicly funded research because many other concurrent factors affect the capacity of the national economy. It is possible to use econometric models, but several methodological and data-related problems still complicate the modelling: see, for example, Helo and Hedman (1996); and, for a study on the Finnish discussion of the effectiveness problem, Oksanen et al. (2003).

Generally speaking, it is easier to build indicators to measure output rather than the effectiveness of an operation. The situation can be clarified by using the following concepts: result, output, effect and effectiveness/impact of the operation. For example, the conclusion of the study is referred to as the result, whereas the article reporting that result is referred to as the output. Any direct effects and changes following on from the output (for example in the products or operational practices of an organisation) are referred to as an effect stemming from the output. Effectiveness refers to broader social changes. These concepts are introduced in greater detail in Lähteenmäki-Smith et al. (2006).

It is often easier to measure output than effectiveness. In part, this was the basis used to evaluate the social interaction of universities in the research project carried out a few years ago by Sussex University’s SPRU (Science and Technology Policy Research) unit; see Molas-Gallart et al. (2002). The objective was to create a simple, measurable, actionable and reliable system. In this project, a conceptual framework makes a distinction between the capabilities of universities and their actual activities. Their capabilities consist of knowledge and infrastructure. Their actual activities consist of research, teaching and communication. These together, and separately, enable them to carry out “third stream” activities, including the commercialisation of technology, entrepreneurship, consultation and expert services, co-operation on academic studies, staff mobility, further education, networking, etc. Each of these, in turn, can be described by a varying number of indicators or combinations thereof. For example, it would be possible to describe the commercialisation of technology using the number of patent applications, the number of accepted patents, the number of licensed patents, the number of licence holders, the number of licence fees and the resources which have been dedicated to support and manage intellectual property rights. This study provides valuable insight into the critical aspects of evaluation methods.

The evaluation model

Bases of the model

The present evaluation model is based on six premises:

1. The social interaction of universities is related to their primary tasks. These primary tasks are education and research. Therefore, the main question for
evaluation is how education and research are integrated into the workings of society.

2. Universities have both national and regional tasks. When estimating the extent of their engagement in society, both of these dimensions must be taken into consideration. The strategic choices of universities and their real focus must be respected.

3. The societal engagement of universities is based on both national and university-specific policy definitions. Evaluation has to take account of both national and university-specific factors at one and the same time.

4. Given that the societal interaction of universities is a complex phenomenon, its evaluation requires the use of metrics combining both quantitative and qualitative indicators.

5. The success of both the evaluation process and the resource allocation process requires close co-operation between the universities and central government. It is important that the evaluation principles are agreed upon by all stakeholders. Common policy definitions strengthen commitment to the whole process.

6. The model for the societal engagement of universities is closely linked to the functioning of the entire university system. It raises questions relating to the issue of entitlement to public financing. In future, one should consider how great a role the societal engagement of universities and the evaluation model should have in co-ordinating structural change in universities, for example.

Model framework

In practice, the construction of the evaluation model can be divided into four stages, as illustrated in Figure 1. In the first stage, central government and the universities define the final indicators to be used in the model. Once the indicators have been defined in detail, agreement must be reached on who is to supply the information required to produce the indicators. That is because, very likely, statistics that are already available provide only some of the necessary information.

In order to understand the phenomenon, it is important to work with several indicators that take account of different perspectives, particularly during the first stage. Later on, as experience is gained, ineffective indicators can be removed. To ensure effectiveness and commensurability, the production of statistics materials should probably be centralised.

For qualitative indicators, the selection can be made from a wider set of variables than for quantitative data because the former are not limited by factors relating to data acquisition. Defining the set of qualitative indicators
and selecting the relevant ranking scale are challenges. For a correct measurement, it is crucial that the contents of the indicators have been carefully defined and that the rankings used (for example: 5 = extremely good, 4 = good, 3 = average, 2 = poor, 1 = extremely poor) are as clear as possible.

A clear-cut combined metric and ranking scale is necessary since several parties participate in the evaluation. Every individual university and central government should be able to evaluate social interaction in a commensurable manner using the combined metric outlined.

In the second stage of constructing the evaluation model, the assessment baskets and their weightings are agreed upon. The universities and central government co-operate on defining the assessment baskets. It is reasonable that central government makes the final decision on any modifications to the assessment baskets. However, the final assessment basket weightings are defined by the universities. This procedure ensures that national and university-specific perspectives are kept in balance. As in the previous stage, constant interaction between both parties must be emphasised in the second stage. In practice, the process could proceed as follows. Central government draws up the proposal for the final assessment baskets and sends it to the universities for comment. After these consultations, central government draws up the final baskets and sends these to the universities. The universities, in turn, draft proposals for their own weightings and submit them to central government.
Obviously, defining assessment baskets and university-specific weightings are critical stages in the evaluation process. The contents and limits of the baskets should be as clear and explicit as possible. Accurate definitions of the assessment baskets engender accurate definitions of the weighting values. Problems at the interfaces of assessment baskets should be reviewed and worked out as thoroughly as possible before the weightings are compiled. Determining the assessment baskets is the basis of the entire evaluation system. Similarly, determining the weightings is a precondition for successfully adapting the combined metric used in the evaluation. The relevant weighting values for the baskets provide a basis for obtaining a realistic picture of the level of societal engagement. For the purposes of utilising the evaluation results, it is important that the universities determine the weightings as realistically as possible. They must avoid the pitfalls of presenting objectives or wishes as the present state of affairs.

In the third stage, the actual evaluation is carried out. The premise for the model is that the evaluation process is conducted with the co-operation of central government and the universities. This applies to the whole process, from compiling the indicators to applying the results. Agreement on a common evaluation outcome is required. In the model, both parties first prepare their own assessments of societal engagement. Ideally, they would check the statistics materials together and any discrepancies in observations would be identified and rectified at as early a stage as possible. In this way, faulty interpretations would be avoided when drafting the actual evaluations. Both parties should jointly draft the evaluation report and agree upon its format. Both parties should also use a common assessment form when giving their separate assessments. Openness, complementarity and interaction between the universities and central government are at the core of successful evaluation work. In practice, in the normal course of the evaluation process the universities submit their self-assessment of the results of the operation to the central government before jointly negotiating to define the final evaluation result. The central government, in turn, draws up its own assessment of the evaluation results for all of the universities. This assessment is used as a basis for drafting the joint assessment. It is only natural that views may sometimes differ significantly and space should be reserved in the final evaluation report to state these differences.

The fourth stage of the evaluation involves applying the results. The results can be analysed at national level because commensurable indicators have been used. The societal engagement of universities at national level can be reviewed in order to formulate policies to promote its development. The model should reveal structural bottlenecks as well as the strengths of the system. The evaluation results obtained would naturally be channelled into central government's management-by-results strategy.
In addition, the universities themselves can utilise the results of the evaluation. From the standpoint of the individual university, integrating the evaluation process and its results into its strategic planning and concrete development projects is important. Universities should also be provided with adequate resources for the evaluation process and for development. Even though societal engagement is already a natural part of university education and research activities, evaluating and developing such engagement requires specific inputs. The advantages gained from these inputs can be regarded as leverage, which can be significant for both the university and society.

One of the key issues in applying the evaluation model is the time-frame. How often should the evaluation stages be repeated? For how long a period should data be collected? As the evaluation model requires resources in order to collect and refine information and to conduct the evaluation process, it should be carried out every three years. If possible, it is worth collecting and utilising statistics every year. However, the evaluation stages and the process itself are best carried out, at most, every third year. In addition to the large amount of work involved, the nature of the phenomenon to be examined itself inclines towards intervals of more than one year. For instance, provision of education in the region is a relatively steady phenomenon and the impact of any initiatives requires a moderately long period before becoming apparent. Besides that, for monitoring patents and licences, an average of several years is required to allow random variations in a given year to even out.

The evaluation process should include a feedback system to ensure its on-going development. Central government and universities should continue to discuss the development of the model and model criteria once the evaluation process is under way. It is almost impossible to build an active and efficient model without learning from trying and testing during the process. The full introduction of the evaluation model must be designed to be phased in over a period of several years. It is not possible to switch quickly to the evaluation system if the required indicators are not available and there is inadequate infrastructure to produce them. In some universities, the development of strategic and operational activities supporting social interaction may have only just begun. The introduction of an evaluation system and the deployment of that system should be carried out a stage at a time, somewhat as in the United Kingdom. During the first stage, the universities and the Ministry of Education define the indicators to be used. They then agree on the assessment baskets and the next steps required to collect and record the information for use. During this stage, funding is allocated to the universities for the introduction of the new system. Once the new information has been collected, the new system can be phased in, stage by stage.
Calculating university-specific indices

The model for calculating university-specific indices is presented in Figure 2. Potential indicators and assessment baskets for the evaluation model are introduced in Appendix A. Although the number of potential indicators is quite large, we think that the actual model should not consist of too many indicators. This is because the data gathering process is resource-consuming for universities. Perhaps two to five key indicators would be enough to measure effects, depending of course on how heterogeneous the universities under evaluation are.

Figure 2. Model for calculating university-specific total index

Conclusion

The final model should be built in close co-operation between universities, central government, statistics compilers and other relevant stakeholders. Cooperation across the board between the Ministry of Education and the universities both in finalising and utilising the assessment model offers a new cooperation-based paradigm which could be applied more widely in the evaluation and development of the education and research system. The transfer to the proposed system could be phased in, in stages, over the next six to seven years.

The assessment of societal and economic engagement is challenging, but the model proposed can be regarded as one step in its development. Although holistic in outlook, this model is not intended to be an all-inclusive description of what should be done and how the assessment should be carried out. Rather
it is intended to provide pragmatic and concrete premises and alternatives for that work. To succeed, the model requires a profound understanding of societal and economic engagement and the processes and measurements involved. Strengthening research into these aspects in Finland would bring added value to practical development.

The authors:
Jari Ritsilä
Research Manager
University of Jyväskylä
Kippo 2C10
40520 Jyväskylä
Finland
E-mail: jari.ritsila@econ.jyu.fi

Mika Nieminen
Senior Researcher
VTT Technical Research Centre of Finland
Innovation Studies
P.O. Box 1000
FI-02044 VTT
Finland
E-mail: mika.nieminen@vtt.fi

Prof. Markku Sotarauta
University of Tampere
Kanslerinrinne 1
33014 Tampere
Finland
E-mail: markku.sotarauta@uta.fi

Jukka Lahtonen
University of Jyväskylä
P.O. Box 35
40014 Jyväskylä
Finland
E-mail: jukka.lahtonen@econ.jyu.fi

Notes
1. On 23 October 2006, the Ministry of Education invited an expert review team consisting of Research Manager Jari Ritsilä, University of Jyväskylä, Senior Researcher Mika Nieminen, VTT Research Centre, and Professor Markku Sotarauta, University of Tampere, to develop criteria for societal and economic engagement for use in university performance management and to propose a model for the monitoring and evaluation of universities' societal and economic engagement.
2. In Canada, the organisation representing universities, the Association of Universities and Colleges of Canada, has made a commitment to regularly publish public reports on innovation and commercialising activities of universities. More information can be found in Langford et al. (2006); AUCC (2005), www.aucc.ca/index_e.html; NCE Program (2002); Ministry of Education of Ontario, www.edu.gov.on.ca/eng/tcu.

3. In the United Kingdom, systematic public funding allocations for the “third task” were launched in 2001 by the Higher Education Funding Council for England (HEFCE). Detailed documentation can be found from the following sources: HEFCE (2005); Källblad (2005).

4. In the United States, one of the central data sources for commercialising activities of universities has been a survey conducted by the Association of University Technology Managers; see AUTM US Licensing Survey at www.autm.net/index.cfm for more information.

5. The OECD/IMHE project “Supporting the Contribution of Higher Education Institutions to Regional Development” was conducted in 2005-06. It is documented in the project’s final report Higher Education and Regions: Globally Competitive, Locally Engaged (OECD, 2007).

References


APPENDIX A

Potential Indicators and Assessment Baskets for the Evaluation Model

Basket 1: Engagement in innovation activities (commercial-technological innovations and system innovations)

1.1. Statistical output measures

- S1. Commercialisation of research activities:
  a) Patents per research resources in the technology field.
  b) Other commercial rights (e.g. licences) per research resources.
  c) Commercial rights as a share of total commercial rights of all universities (relative strength).

- S2. Private sector development:
  d) Skill-intensive spin-off firms per employees.
  e) The number of students becoming self-employed as a share of the number of graduating students.
  f) Theses on enterprise development per senior students.

- S3. Expert services:
  g) R&D projects in private sector as a share of project funding.
  h) R&D projects in public sector as a share of project funding (excluding internal development projects of universities).
  i) Consultations per employees.

- S4. Specialisation relating to the exploitation of innovations (strategic focuses):
  j) Index of specialisation of rights produced (industry).
  k) Index of specialisation of R&D-finance (field).
  l) Specialisation relating to business start-ups (field).
1.2. Qualitative structural indicators

- QS1. Emphasis given to the exploitation of business innovations in strategic thinking and planning.
- QS2. Emphasis given to the exploitation of non-business innovations in strategic thinking and planning.
- QS3. Strategic tools for supporting the exploitation of business innovations.
- QS4. Strategic tools for supporting the exploitation of non-business innovations.
- QS5. Structures supporting the exploitation of business innovations.
- QS7. Incentives for supporting the exploitation of business innovations.
- QS8. Incentives for supporting the exploitation of non-business innovations.

1.3. Qualitative indicators of effectiveness

- QE1. Assessment of the quality of the university strategy for exploiting innovations.
- QE2. Assessment of the success of strategy implementation for exploiting innovations.
- QE3. Assessment of added value in the exploitation of innovations.
- QE4. Assessment of effectiveness in exploiting innovations in universities.

Basket 2: Engagement in the labour market

2.1 Statistical output measures

- S5. Students entering the labour market:
  a) The employment rate of new graduating students.
  b) The employment rate of students one year after graduation.
  c) The employment rate of students working in a field consistent with their education (one year after graduation).

- S6. Practical training of students:
  d) Students participating in practical training as a share of total students.
  e) Students participating in practical training in the private sector as a share of total students participating in practical training.
  f) The rate of participation in practical training among international students.
S7. Further education/in-service training:

- The number of students participating in further education as a share of total students.
- Further education provided for the private sector (measured in hours) as a share of total hours of further education provided.
- The rate of participation of in-house staff in further education (includes only periods of employment of one year or more).

S8. R&D activities supporting education/labour market match:

- Research projects supporting education/labour market match, as a share of total project funding.
- Development projects supporting education/labour market match, as a share of total project funding.
- Consultations supporting education/labour market match per employee.

2.2. Qualitative structural indicators

- QS10. Structures enhancing education/labour market match.
- QS11. Incentives for enhancing education/labour market match.

2.3. Qualitative indicators of effectiveness

- QE5. Assessment of quality of strategies to enhance education/labour market match.
- QE6. Assessment of the success of instruments to enhance education/labour market match.
- QE7. Assessment of added value from enhancing education/labour market match.
- QE8. Assessment of effectiveness of enhancing education/labour market match.

Basket 3: Engagement in socio-ecological development (sustainable development/social responsibility)

3.1. Statistical output measures

- S9. Services enhancing physical and mental well-being:
  - Projects enhancing physical and mental well-being as a share of total project funding (excluding internal development projects).
  - Number of consultations to enhance physical and mental well-being per employee.
c) Concrete services enhancing physical and mental well-being measured by hours per employee.

- S10. Activities preventing social isolation:
  d) Projects supporting the prevention of social isolation as a share of total project funding.
  e) Number of consultations to prevent social isolation per employee.
  f) Concrete services to prevent social isolation measured by hours per employee.

- S11. Activities supporting sustainable development:
  g) Projects supporting sustainable development as a share of total project funding.
  h) Number of consultations to support sustainable development per employee.
  i) Concrete services to support sustainable development measured by hours per employee.

- S12. Promoting cultural activities:
  j) Projects promoting cultural activities as a share of total funding.
  k) Number of consultations to promote cultural activities per employee.
  l) Concrete services to promote cultural activities measured by hours per employee.

3.2. Qualitative structural indicators

- QS12. Strategic tools for enhancing individual well-being.
- QS15. Strategic tools for improving social cohesion.
- QS17. Incentives for improving social cohesion.
- QS18. Strategic tools for promoting cultural activities.
- QS19. Structures for promoting cultural activities.
- QS20. Incentives for promoting cultural activities.

3.3. Qualitative indicators of effectiveness

- QE9. Assessment of quality of the strategy to develop the socio-ecological environment.
- QE10. Assessment of success of implementing strategies to develop the socio-ecological environment.
● QE11. Assessment of added value from developing the socio-ecological environment.
● QE12. Assessment of the effectiveness of developing the socio-ecological environment.

Basket 4: Engagement in the regional environment

4.1. Statistical output measures

● S13. Contribution to local R&D activities:
  a) Start-ups of university-inspired firms in local area as a share of the total number of start-ups of university-inspired firms.
  b) Theses completed in co-operation with local firms as a share of total theses completed in firms.
  c) R&D projects in local area as a share of total R&D projects.
  d) Consultations in local area as a share of total consultations.

● S14. Contribution of education to local area:
  e) The net number employed in the local labour market of those participating in education.
  f) Local practical training as a proportion of total practical training.
  g) Local further education as a proportion of total further education.
  h) Local labour market R&D activities as a proportion of total R&D activities.

● S15. Regional dimension of social responsibility:
  i) Local activities to enhance physical and mental well-being as a share of total activities.
  j) Local activities to prevent social isolation as a share of total activities.
  k) Local projects enhancing sustainable development as a share of all projects.
  l) Local projects enhancing cultural activities as a share of all projects.

● S16. Participation in local development forums and discussions:
  m) Membership of local forums aiming to develop the socio-economic environment as a share of the total number of such memberships.
  n) Strategic projects in co-operation with key local interest group organisations as a share of all such strategic projects.
  o) Exchange of employees between the university and key local interest group organisations as a share of all such employee exchanges.
  p) The amount of local research on the socio-economic environment as a share of all such research.
4.2. Qualitative structural indicators

- QS21. Strategic tools for enhancing the local contribution of education.
- QS22. Structures aiming to enhance the local contribution of education.
- QS23. Incentives for enhancing the local contribution of education.
- QS24. Strategic tools for enhancing the local contribution of R&D activities.
- QS25. Structures for enhancing the local contribution of R&D activities.
- QS26. Incentives for enhancing the local contribution of R&D activities.
- QS27. Strategic tools for exercising social responsibility in local areas.
- QS28. Structures for exercising social responsibility in local areas.
- QS29. Incentives for exercising social responsibility in local areas.

4.3 Qualitative indicators of effectiveness

- QE15. Assessment of added value from the local contribution.
- QE16. Assessment of the university’s local engagement by interest groups.

Basket 5: Engagement in public social debate
(systems for decision-making, planning and participating in public discussion)

5.1 Statistical output measures

- S17. Participation in social development forums:
  - a) Membership of fixed-term working groups for socio-economic development (as a share of total employees).
  - b) Membership of permanent working groups for socio-economic development (as a share of total employees).
  - c) Leadership in working groups and forums for social development (as a share of total membership).
- S18. Contribution to social models for forecasting and change in society:
  - d) Models for forecasting demand for skills built in co-operation with key interest groups in social development (gross measure).
  - e) Strategic co-operative projects with key interest groups in social development (gross measure).
  - f) Joint strategies with key interest groups in social development (gross measure).
● S19. Exchange of employees with key interest groups:
  g) Transfer of employees from university to key interest groups in social
development as a share of total employees.
  h) Transfer of employees from key interest groups in social development to
university as a share of total university employee transfers.
  i) Active exchange of employees between key interest groups and the
university.
● S20. Contribution to socio-economic research:
  j) Finance for socio-economic research per total employees.
  k) Scientific articles concerning socio-economic environment per total
employees.
  l) Socio-economic congresses and seminars organised by the university.

5.2. Qualitative structural indicators
● QS30. Strategic tools for participating in social discussion.
● QS31. Structures for participating in social discussion.
● QS32. Incentives for participating in social discussion.

5.3. Qualitative indicators of effectiveness
● QE17. Assessment of strategic basis for participating in social discussion.
● QE18. Assessment of the success of implementing strategies for social
discussion.
● QE19. Assessment of the effectiveness of participation in social discussion.
Information for authors

Contributions to the Higher Education Management and Policy Journal should be submitted in either English or French and all articles are received on the understanding that they have not appeared in print elsewhere.

Selection criteria

The Journal is primarily devoted to the needs of those involved with the administration and study of institutional management in higher education. Articles should be concerned, therefore, with issues bearing on the practical working and policy direction of higher education. Contributions should, however, go beyond mere description of what is, or prescription of what ought to be, although both descriptive and prescriptive accounts are acceptable if they offer generalisations of use in contexts beyond those being described. Whilst articles devoted to the development of theory for its own sake will normally find a place in other and more academically based journals, theoretical treatments of direct use to practitioners will be considered.

Other criteria include clarity of expression and thought. Titles of articles should be as brief as possible.

Presentation

Electronic submission is preferred. Three copies of each article should be sent if the article is submitted on paper only.

Length: should not exceed 15 pages (single spaced) including figures and references (about 5 000 words).

The first page: before the text itself should appear centred on the page in this order: the title of the article and the name(s), affiliation(s) and country/countries of the author(s).

Abstract: the main text should be preceded by an abstract of 100 to 200 words summarising the article.

Quotations: quotations over five lines long should be single-spaced and each line should be indented seven spaces.

Footnotes: authors should avoid using footnotes and incorporate any explanatory material in the text itself. If notes cannot be avoided, they should be endnotes, at the end of the article.

Tables and illustrations: tabular material should bear a centred heading “Table”. Presentations of non-tabular material should bear a centred heading “Figure”. The source should always be cited.

Addresses of author(s), including e-mail, should be typed at the end of the article.

References in the text: Vidal and Mora (2003) or Bleiklie et al. (2000) in the case of three or more authors. However, the names of all authors should appear in the bibliography at the end of the article.

Bibliography at the end of the article: references should be listed in alphabetical order under the heading “References”. Examples of the reference style used in the Journal are:


The covering letter

This should give full addresses and telephone numbers and, in the case of multi-authored papers, indicate the author to whom all correspondence should be sent.

Complimentary copies

Each author will receive two complimentary copies of the Journal issue in which his/her article appears, in the original language.

Articles submitted for publication should be sent to:

The Editor
Higher Education Management and Policy
OECD/IMHE
2, rue André-Pascal
75775 Paris Cedex 16
France
imhe@oecd.org
Higher Education Management and Policy
JOURNAL OF THE PROGRAMME ON INSTITUTIONAL MANAGEMENT IN HIGHER EDUCATION

Introduction to the Special Issue: Higher Education and Regional Development 9
The Engagement of Higher Education Institutions in Regional Development:
An Overview of the Opportunities and Challenges
John Goddard and Jaana Puukka 11
Universities, Innovation and Regional Development: A View from the United States
Mark Drabenstott 43
A World of Competitors: Assessing the US High-Tech Advantage
and the Process of Globalisation
John Aubrey Douglass 57
University Engagement: Avoidable Confusion and Inescapable Contradiction
Chris Duke 87
Globally Competitive, Locally Engaged: The Case of Kentucky
Aims C. McGuinness, Jr. 99
Provincial University of Lapland: Collaborating for Regional Development
Ari Konu and Eero Pekkarinen 115
The Contribution of Higher Education to Regional Cultural Development
in the North East of England
Eric Cross and Helen Pickering 125
The Dilemma of the Modern University in Balancing Competitive Agendas:
The USQ Experience
Bill Lovegrove and John Clarke 139
Benchmarking University Community Engagement: Developing
a National Approach in Australia
Steve Garlick and Anne Langworthy 153
Societal and Economic Engagement of Universities in Finland: An Evaluation Model
Jari Ritsilä, Mika Nieminen, Markku Sotarauta and Jukka Lahtonen 165

Subscribers to this printed periodical are entitled to free online access. If you do not yet have
online access via your institution’s network, contact your librarian or, if you subscribe personally,
send an e-mail to SourceOECD@oecd.org.