



LEADING THE ENTREPRENEURIAL UNIVERSITY

Meeting the entrepreneurial
development needs of higher
education institutions

October 2009

Allan Gibb

Professor Emeritus University of Durham England
enterprise@allangibb.com

Gay Haskins

Dean Executive Education
Saïd Business School, Oxford University
gay.haskins@sbs.ox.ac.uk

Ian Robertson

Chief Executive Officer
UK National Council for Graduate Entrepreneurship
ian.robertson@ncge.org.uk

The National Council for Graduate Entrepreneurship (NCGE) is an independent organisation whose aim is to raise the profile of graduate entrepreneurship and increase the number of students and graduates (within five years of graduation) seriously considering engaging in business start-up in all its forms, including self employment.



PREFACE

This paper focuses upon the leadership challenge facing staff of universities across the world in moving their institutions to a more entrepreneurial mode (Bernasconi 2005, Keist 1995). It is based upon an extensive literature review, the results of which demonstrate clearly that the issues raised in this paper are widely shared internationally. ¹The paper has an action and innovation focus in that it constitutes part of the preparation for the development of a University Entrepreneurial Leadership Programme – a partnership between the UK National Council for Graduate Entrepreneurship (NCGE)² and Oxford University's Saïd Business School³. The paper demonstrates the thinking and concepts behind the programme.

¹The extensive referencing is designed to demonstrate that wide global context of the issues discussed. The authors thank Klara Kapova of Durham University for her invaluable assistance in conducting a bibliographical search.

²www.ncge.org.uk

³www.sbs.ox.ac.uk

LEADING THE ENTREPRENEURIAL UNIVERSITY

Meeting the Entrepreneurial Development Needs of Higher Education Institutions

1. INTRODUCTION

There is now a considerable international literature addressing the notion of what has been termed 'the entrepreneurial university' (Wasser 1990, Clark 1998, OECD 2000, Currie 2002, Barsony 2003, Jacob, M, Lundqvist and Hellsmark 2003, Etzkowitz 2004, Gibb and Hannon 2006, Kirby 2006, Lazzeroni and Piccaluga 2003, Poh-Kam Wong et al 2007, Guerrero- Cano 2008, Mohrman et al 2008, Lehrera et al 2009). The entrepreneurial university concept embraces universities of all types including those with a strong research tradition as well as newer organisations (Geiger 2006, Mohrman et al 2008 Kauffman, 2009). The literature, both academic and pragmatic policy-oriented, ranges over a wide range of issues including:

- the basic philosophical 'idea' of a university and how this is changing over time (Davis and Chandler 1998, Coaldrake and Stedman 1999, Smith and Langslow 1999, Maskell and Robinson 2001, De Ziwa 2005) and the culture of the university (Daumard 2001, Davies 2001, Mendoza and Berger 2008);
- the commercialisation of university know-how (Cook et al 2008);
- the process of technology transfer and exchange (CVCP 1999, Leydesdorff and Meyer 2003, Markman et al 2005, Sainsbury 2007, Mittelstädt and Cerri 2008, Zhou 2008);
- the associated closer engagement of the university with industry and indeed stakeholders of all kinds (Garlic 1998, Owen-Smith et al 2002, Charles 2006, CIHE 2008);
- the movement towards a 'Triple Helix' model of partnership between government, industry and higher education (Etzkowitz and Leydesdorff 2000, Leydesdorff and Etzkowitz 2003, Thorn and Soo 2006);
- the employability and skills development agenda of graduates and their preparation for a global labour market (HEFCE 2003, EU 2005, ESECT 2006. Leitch 2006, Archer and Davison 2008);
- the strategic response to the 'massification' of demand for higher education (Smith 1999, Shattock 2000);
- the internationalisation of universities (Noir sur Blanc 1999, Kwiek, 2000 and 2001, Knight 2003, Altbach 2005, Altbach and Knight 2006, OECD 2006) and their strategies for dealing with global competition (both opportunities and threats);
- the changing nature of the knowledge society and the challenge this poses to the organisation of knowledge within higher education (Barnett 2000, Viale and Etzkowitz 2005, Becher and Trowler 2007, Senges 2007);
- the pressures on universities to respond to social as well as economic local and regional development problems albeit in a global context (Charles 2003, AUQA 2005, Smith 2007, Arbo and Benneworth 2007);
- the central pressure upon higher education, from central government, to foster innovation



and demonstrate relevance to national and international competitiveness agendas (Lambert 2003, Williams and Kitaev 2005, Mittelstadt et al 2008);

- the autonomy and future funding of universities (Darling et al 1989, Greenaway and Haynes 2003, Li-Chuan Chiang 2004, Moses 2005, Bridgeman 2007, Armbruster 2008);
- and overall, in response to the above, reflections on the 'public value' of higher education institutions (Moore 1995, Weerts 2007).

The literature reveals the growing diversity of the university concept internationally (Thorn and Soo 2006), and within countries (Poh-Kam Wong et al 2007, Pan Su-Yan 2007). There are very many different 'typologies' of universities, with different views of 'excellence' (van Vught 2008) and each with different strategic agendas, some with a strong industry, technology and/or occupational focus (Pratt 2001, Jacob et al 2003). This in turn leads to debates about the growing influence of vocationalism in higher education (Bridges and Jonathan 2003) and the linking of the higher education sector with other institutions in a country's education system particularly further education and community colleges (Hager and Hyland 2003). At a national level, however, traditions and power-influencing hierarchies and pressure groups (Bourdieu 1999) play a major role in both constraining and shaping the nature of higher education institutions and their capacity to adapt to change. Such influence is also reflected in the education policy frameworks of governments (EU 2005) which are increasingly

directive (Slaughter and Leslie 1997, Hayrinen-Alestalo 1999, Henkel 2004). In general (but not universally⁴) throughout the world, governments still hold considerable sway over the sector via its substantial dependency upon the public purse (Williams 2009).

All of the above pressures have served to shape change in organisation and governance structures of universities (Higher Education in Europe 2004, Kohler and Huber 2006). They are also leading to changes in mission statements and strategies (Shattock 2000, Cherwitz 2002 and 20005). These changes have been the focus of much of the debate concerning the entrepreneurial paradigm (Martin and Etzkowitz 2000, Leydesdorff and Etzkowitz 2001, Bok 2003, Becher and Trowler 2007). Leading writers on this theme have effectively made recommendations as to how to redesign institutions entrepreneurially (Clark 1998 and 2004, Wissema 2008, Etzkowitz 2008) but without full exploration of the entrepreneurial organisation concept. Considerable attention has also been focused upon the leadership challenges involved in the changing modes of governance, particularly in the UK, through the work of the Higher Education Leadership Foundation (CEL 2006, 2007) but with only limited focus upon the arguably highly relevant notion of the entrepreneurial leader. What appears to have been largely missing in the debate therefore has been deeper basic exploration of the two key relevant concepts of entrepreneurial organisation and entrepreneurial leadership and their effective interface within the dynamic change environment facing the Higher Education sector. In this paper we will explore these concepts with reference to the 'debates' noted above.

⁴ See, for example, the cross country analysis in IHEP 2009

The remainder of the paper is organised as follows. First, there is an exploration of the nature of the environment impacting on higher education, the varied institutional responses and how the entrepreneurial concept relates to this. Second there is an analysis of the challenge to organisation design as well as individual academic response, and how this relates to notions of the entrepreneurial organisation. Third there is exploration of the leadership challenge and its particularly entrepreneurial flavour. Fourth there is a summary of what this means for the development of leaders and key managers in the higher education institution and how it is proposed that a programme might be designed to meet development needs. The paper ends with a brief description of how this programme fits into the national objectives of the NCGE and its support of sustainable organisational change in UK higher education institutions.

2. THE ENTREPRENEURIAL ENVIRONMENTAL CHALLENGES AND UNIVERSITY RESPONSES

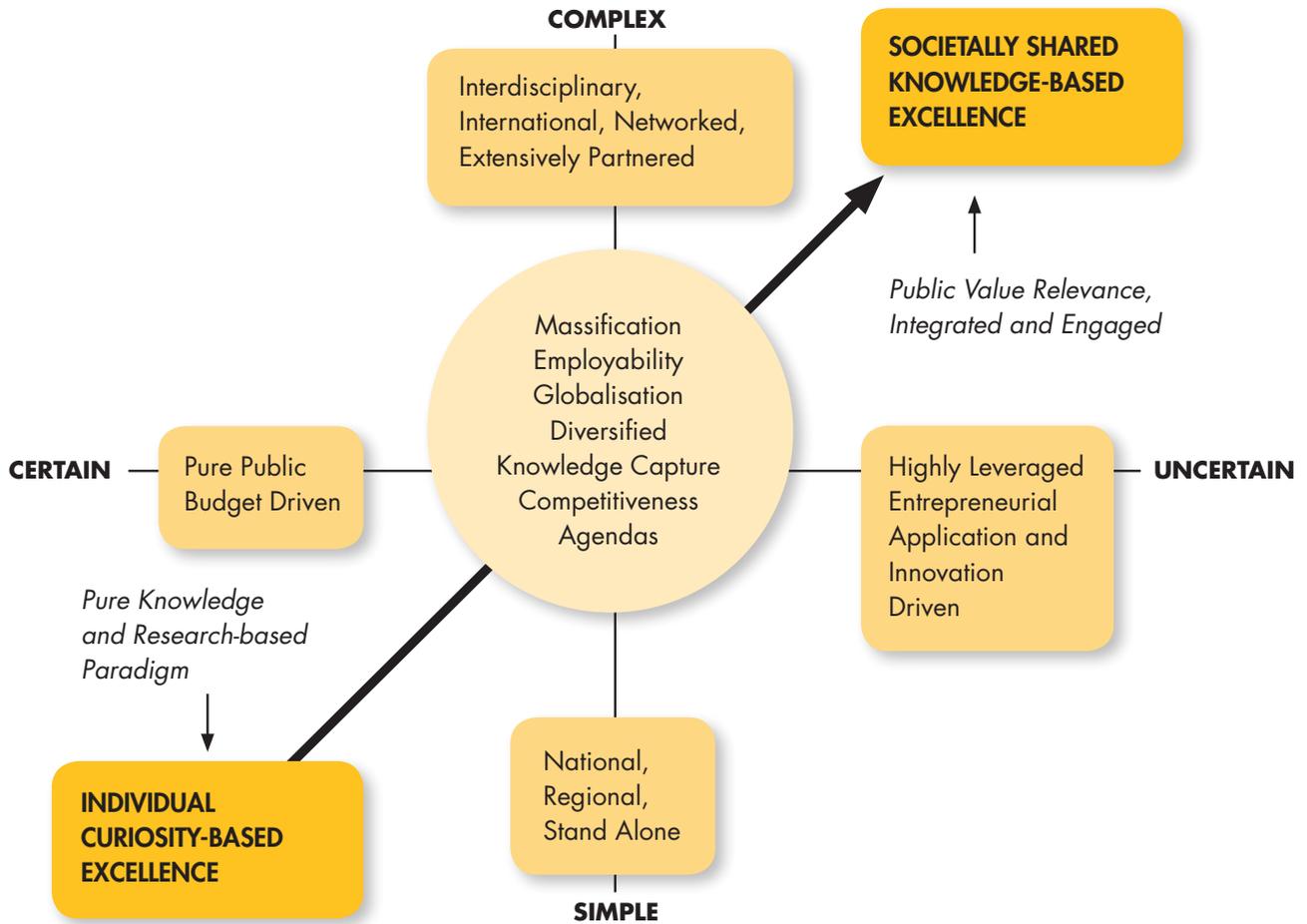
The entrepreneurial concept is centrally concerned with the means of coping with and creating uncertainty and complexity (Casson 1982, Ch. 5). Its traditional essence, (Schumpeter 1934), is that of creating and dealing with new and innovative combinations of 'factors of production' and 'ways of doing things'. The Schumpeterian notion of 'creative destruction', leading to innovation and renewal, manifests itself in uncertain and complex task environments for those within the system. Dynamic task environments with high levels of change therefore demand, and emerge through, entrepreneurial initiative. Conversely static environments lend themselves to more predictable and routinised bureaucratic patterns of response.

The changing dynamic environment of higher institutions and their respondent evolution (Doutriaux and Barker 1996, Kohler 2006, Wissema 2008) is portrayed in Figure 1 (over). The Figure attempts to characterise the evolving nature of the task environment facing universities on a simple/complex and certain/uncertain axis.⁵ It highlights the way that the notion of 'Excellence' might be changing (Corbett 2006, Deem et al 2008, Huisman 2008, Wissema 2009). Within this frame it seeks to summarise their response as evidenced by a growing body of literature.

Certainty in the environment has been reduced by changes in funding. There has been a movement away from a system that was at one time nearly total central or regional public funding, to a situation where a growing proportion of finance has to be sought from non-direct public sources including fees, research grants, local development monies, alumni, industry and social enterprise, contract research and philanthropy (Williams 2009). While government remains a key player in most countries, it has moved its disbursement stance into a more directive mode. Thus the uncertainty resulting from having to seek a greater proportion of funding from other sources is matched by pressure to move away from the simpler, more certain, 'autonomous' environment (guaranteed by the public purse) within which to pursue individualistic research and teaching. There is now an imperative to demonstrate more direct public value (see below). Some governments (e.g. Finland) are providing direct financial incentives to higher education institutions to leverage public funding.

⁵ Derived from Lawrence and Lorsch (1986), Covin and Slevin 1991 and Gibb 1985).

FIGURE 1 - THE CHANGING UNIVERSITY PARADIGM



Acknowledgements to Professor Antti Paasio of the University of Turku Finland who provided the germ of the idea. While the arrows on the Simple/Complex and Certain/Uncertain matrix point in one direction it is possible for a university to move from any one segment to another.

The public pressures for change are underpinned by a number of factors which are also contributing substantially to uncertainties and complexities, as explored in the sections below.

The Massification of Higher Education

Of major importance is the move to what has been labelled the 'massification' of the education offer from the university sector (Rinne and Koivula 2009). The UK government, for example, has committed itself to higher education being open to half the UK school leaving population. This is a trend evident in many other 'developed' countries (Rinne op cit.). It is difficult, if not impossible for this growth in 'demand' to be wholly funded by the state. The emphasis is therefore placed on other sources of funding particularly fees – a controversial issue in many countries (Douglas 2008). This leads in turn to the creation of a more openly competitive market for students, requiring a more entrepreneurial response from institutions. It is also leading to a more critical and demanding student consumer group many of whom are now funding more of their own education through personal debt. There is already evidence of this in the UK⁶ : this situation has been considerably exacerbated by the 2009 global crisis.

The Employability Agenda

The global downturn has also impacted substantially on the issue of the employability of graduates (ESECT 2005, Cranmer 2006). Universities are finding themselves in a competition focused upon the job take-up of their students. Students themselves face increasing regional and global competition in the labour market (Rajan et al 1997, Westwood 2000). The employability issue, however, goes beyond that of simple graduate unemployment and employment prospects. There are calls by industry and indeed governments for graduate education to incorporate a greater skills focus across the whole curricula (OECD 2001, Papayannakis et al 2008). More precisely, there is an articulation by employers of the need for graduates to be equipped with a range of 'enterprising skills' with foci upon creativity, capacity for innovation, networking relationship management and risk taking (Moreland 2007). This 'need' has been extensively articulated by the European Commission in a number of studies calling for the development of the 'Entrepreneurial Mindset' in the student population (EU 2006). There is also some evidence that this view of the importance of entrepreneurial skills to future employment is shared by the student population (Coaldrake 2001) and that universities are not seen to be fully equipped to meet this need (Coaldrake 2001, Durham University CEL 2009). While, therefore, there is certainly a demand it is clear that it cannot easily be met within the existing institutional system (Cranmer 2006).

The Student Voice

Against the above backcloth, there has been a substantial growth of student societies in universities across the world many of them linked internationally in partnership⁷ . Many UK universities, for example, now have student entrepreneurship societies some with very substantial membership and engaged in a wide range of activity. The Oxford University society, 'Oxford Entrepreneurs'⁸ , has a membership

⁶Student protests across the UK. BBC News Wednesday November 5 2008

⁷See for example the work of Students in Free Enterprise (www.sife.org) and European Confederation of Junior Enterprises (JADE) (www.jadenet.org)

⁸www.oxfordentrepreneurs.co.uk



of several thousand students. It has a full time (one year sabbatical) president and runs a variety of activities, including competitions, networking and counselling events, start-up workshops, guest speaker presentations, placement programmes and links to venture capital. These societies become a mechanism for articulating student need to the university and demand for entrepreneurship programmes across the whole curriculum (Edwards 2001). While they generally operate with a considerable degree of autonomy they can benefit substantially from dedicated staff support (Williamson 2009).

Developing Entrepreneurial Skills

This articulation of employer need, coming from a range of private and public sources, has moved the focus of graduate entrepreneurship education beyond its hitherto major concentration upon equipping a limited number of graduates for self employment (Green and Saridakis 2008) into the area of development of entrepreneurial skills for all (Jack and Anderson 1999, Klofsten 2000, Rae and Carswell 2000, Blenker et al 2006, Miclea 2004, Kneale 2005). This matches a public policy rhetoric which goes beyond industry demand towards articulating the need to equip students at all levels in the education system with personal entrepreneurial capacities to deal with greater levels of uncertainty and complexity in both their work and personal life (Poon Teng Fatt et al 1995, Ravasi and Turati 2005, Gibb 2007). This includes the capacity to design organisations of all kinds, public, private and NGO, to support effective entrepreneurial behaviour (Barrie 2007). This focus has also opened up a wider debate on the nature of university learning (Haggis 2006, Leisner 2006, Barrie 2007, Kinchin et al 2008).

This broad view of entrepreneurship places emphasis in a 'teaching' context upon the pedagogical and organisational processes necessary to support entrepreneurial competency and attributes across a range of different disciplinary and multi-disciplinary contexts (Volkman 2004, Politis 2005). Entrepreneurship therefore becomes almost an intra-disciplinary concept intrinsic to the development of all students and teaching staff (Coaldrake and Stedman 1999, Roma et al 2008).⁹ This is far from the conventional business school model. The approach also, however, has implications for the organisational structures that will support the embedding of such an entrepreneurial concept within the organisation (see below). Much of the recent thinking in this respect is influenced by the work of the US Kauffman Foundation and its Cross-Campus Entrepreneurial Education Initiative (www.kauffman.org <<http://www.kauffman.org>> and Mendes et al 2006).

The broader employability and entrepreneurial skills agenda has also presented a major challenge for the work of university careers departments many of whom are now engaging with external agencies on the development of programmes for enhancing a range of graduate entrepreneurial skills as well as capacity for self employment (www.ncge.org.uk) . This shift in emphasis has major implications for the development of their own staff.

⁹This view provides the basis for the International Entrepreneurship Educators Programme (IEEP) of the NCGE which is open to staff of all university departments.

The Challenge of Globalisation

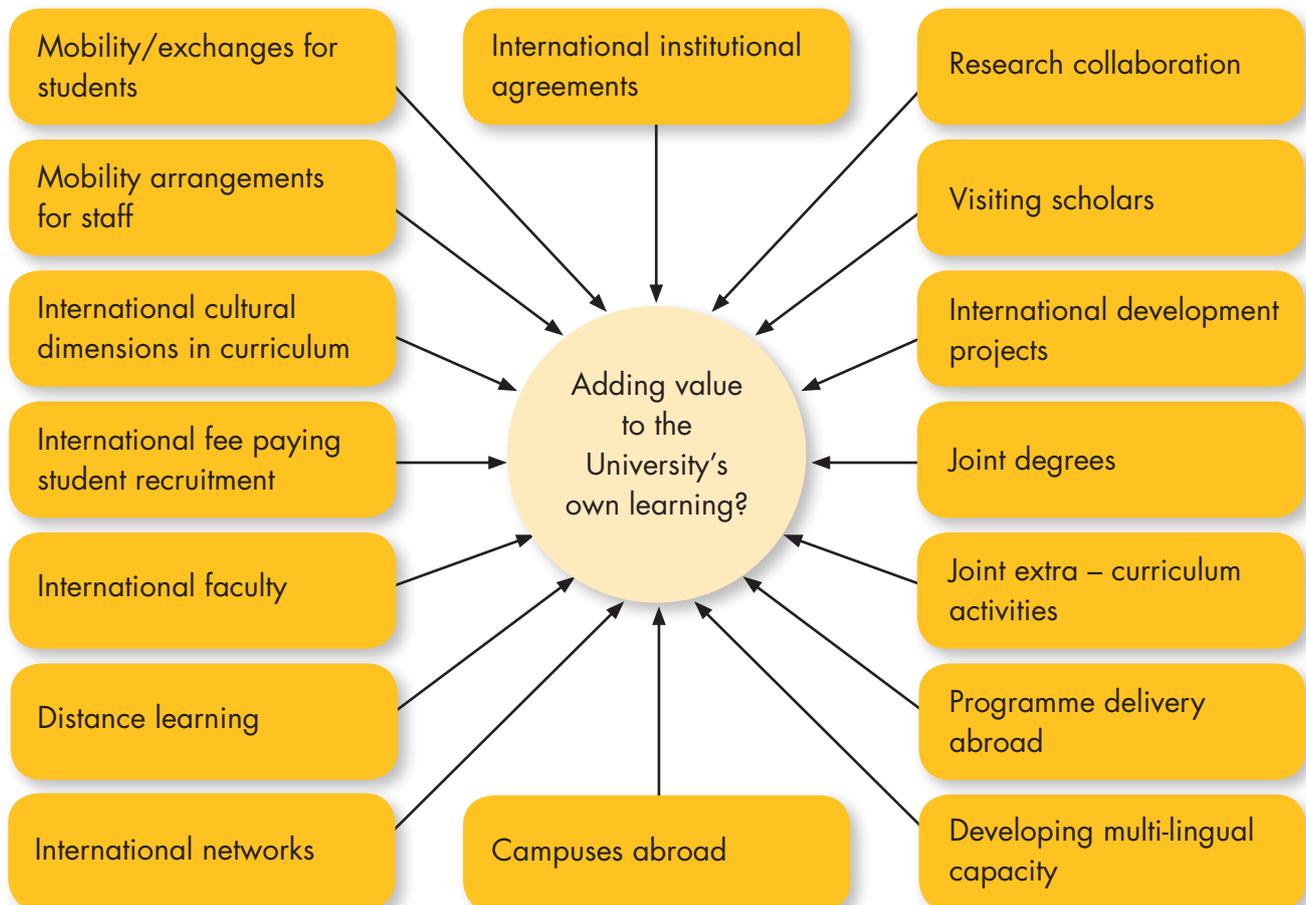
Graduate employment futures, in the context of a global labour market, are characterised by frequent job, occupational and locational change involving potentially also periods of involuntary self or contract employment (Rajan et al 1997). This demands a capacity in graduates to think and act both locally and globally in an entrepreneurial way. Their ability to develop this capacity becomes a function of the nature of the university itself and its strategies to bridge the local-global interface. In this context the policy thrust in Europe has been to firmly link entrepreneurship with competitiveness and education (European Commission 1998, 2005, 2006, 2007, 2008). There is much debate on this issue in the education literature (Carnoy 1999, Brush et al 2003, Altbach 2005) with a distinction made between exploring the impact of globalisation and the changes demanded or resulting from wide ranging global pressures (Kwiek 2000 and 2001, Toakley 2004, Scase 2007) on the one hand, and internationalisation, or the processes by which a university seeks to respond to threats and opportunities on the other. Distinctions can thereafter be made between the motivations of universities to internationalise, the targets they set for themselves, the processes they pursue and the desired outcomes.

Already, at the beginning of this century, across Europe, the vast majority of higher education establishments saw internationalisation as of major importance (Noir Sur Blanc 1999). The imperative in this respect has since become acute (UNESCO 2003, OECD 2004, International Association of Universities 2005). This reflects the fact that institutions increasingly perceive themselves as being in an internationally competitive market place, for staff, for students, for income generation and for research (UNESCO 2003, Altbach and Knight 2006,). Prestige, not finance, appears to be a major motivation: internationalisation is seen to raise the national as well as the global profile (Altbach and Knight 2006). It can also be seen as part of a competitive strategy to improve quality of staff and students via overseas recruitment as well as a means of enhancing student experience and existing staff development (Green and Baer 2000). It can lead on to curriculum development and innovation as well as greater cultural sensitivity. Developing partnerships, both academic and industrial, also seems to be a powerful tool in this respect.

The Internationalisation Strategies of Universities

Commitment to internationalisation involves elements of entrepreneurial risk taking and strategic choice (Knight 2003). Figure 2 encapsulates the various target processes and activities involved in internationalisation. Some of these activities and processes carry more risk than others. Establishing overseas campuses, for example, entails high risk. The centre-point of Figure 2 is arguably the most important strategic outcome, that is the degree to which the institution adds value to its own learning as a result of the activities listed and the degree to which it rewards such learning. The major issue here is to what extent international activity adds to the global understanding of the institution, enhances student and staff learning, and enables it to truly understand, be sensitive to, and work with, different cultures (Green and Baer 2000). Overall, in outcome evaluation terms, there will be a need to measure the degree to which the activity brings both status and material (income and other resource) rewards that are sustainable. The former, appears to be as, if not more, important than the latter although in the long run the two are intimately related.

FIGURE 2 - ACTIVITIES AND PROCESSES INVOLVED IN UNIVERSITY INTERNATIONALISATION



The Global Knowledge Configuration

A major influence upon the drive to internationalisation is the rise of the global knowledge economy (Peters 2003) accessed substantially through the internet (Senges 2007). The web has effectively eaten into the local and national monopoly of knowledge that universities have traditionally enjoyed. It has also created new combinations and foci for knowledge (Delanty 2001) in that it is no respecter of traditional disciplines and more open to the organisation of knowledge on a 'need to know' and issue basis. It challenges the monopoly that universities have hitherto had on the organisation and delivery of 'explicit' knowledge (Habermas and Blazek 1987, Delanty 2003); and it challenges the power of elite groups who maintain and channel knowledge through major journals and publications. It considerably reduces the time it traditionally takes, through academic journals, to bring new knowledge into the public domain. Journals and their academic editors and boards are having to adapt to this competitive pressure exemplified, increasingly, by individual academics opening up their ideas and findings through their own websites and Facebook entries. The sharing of experiential and tacit knowledge via the internet

also exposes the 'know how' position of universities. Faced with this scenario, academe is confronted with the challenge of becoming more of a 'learning organisation' (Kristensen 1999) rather than solely a 'learned organisation', opening itself up to learning from a wider range of stakeholder sources, involving engagement in the 'community of practice' (Wenger 1998) as well as in more formal/informal processes of knowledge exchange.

Knowledge Transfer And Engagement Processes

In the developed economies, active university engagement in knowledge exchange has also been substantially driven by a public policy agenda which has placed higher education firmly in the forefront of enhancement of national innovation and competitiveness (Lee 1996, Agraval 2001, Shane 2004, Kweik 2005). Over the past decade in particular this has been the lever for change in the way that universities disseminate knowledge (Lee 1996, Mendoza and Berger 2005). The traditional mode in respect of science (the main focus of public pressure) was independent creation of knowledge beyond direct control of government (although substantially funded by it). Research was driven by curiosity not economic interest, and disseminated by publication of papers. This last-mentioned was the main channel for placing new knowledge into the public domain. It was assumed that 'industry' would read, digest and act when appropriate. Over the last half-century the limitations of this approach have been very exposed in particular with reference to the time lags involved in publication, and the dependency upon the disposition of individuals who may move both location and field of interest and their associated interaction with industry.

Almost universal approaches to dealing with this problem have been through knowledge transfer institutions and mechanisms such as: the creation of science and technology parks, adjacent to, and sometimes owned by, universities; the development of the role of intermediaries such as industrial liaison offices; the opening of technology transfer and information offices (Chapple et al 2004); the development of student and staff incubators (Ylinenpää 2001); the launching of new venture programmes for staff and students; the development of clearer IP policies and arrangements for the licensing and patenting of university know how (Baldini et al 2006); the organisation of spin off activity; and the creation of venture and loan funds.

There is evidence, however, that this is not enough. A growing body of literature (Hughes 2003, Link et al 2006, Dooley and Kirk 2007, Abreu et al 2008) argues that the key to successful knowledge transfer is a process of continuous dialogue, building up social networks (Nicolaou and Birley 2003), success in which is a function of development of strong personal (as opposed to institutional) relationships over time leading to the creation of trust (a key element in entrepreneurial activity). It has been even argued that an over-focus upon transactional mechanics such as licenses and patents may distract from the development of personal intimacy and trust (Dooley and Kirk 2007, Brown and Jenkins 2008).

The role of the individual academic in building the relationship is that of bringing a wider perspective to a client problem and being prepared to engage in development out of research and by this means help to bridge the gap between explicit and tacit knowledge which is often highly contextual. This relationship involves complete engagement with a process and is not just a simple case of commercial exploitation



of a particular piece of university research (Agraval 2001). In this way the concept of transfer partnerships takes on a deeper meaning than that embodied in some official policy recommendations (Sainsbury 2007). The building of relationships provides a number of benefits to the university including: potential additional funding for research; access to proprietary technology held by industry; and enhanced status and faster feedback loops on its own concepts and ideas (Geiger 2004 and 2006 Dooley and Kirk 2007). It may also put pressure on the university to generate problem-focused multi disciplinary teams and centres (Campbell et al 2002, National Academy of Science USA 2005).

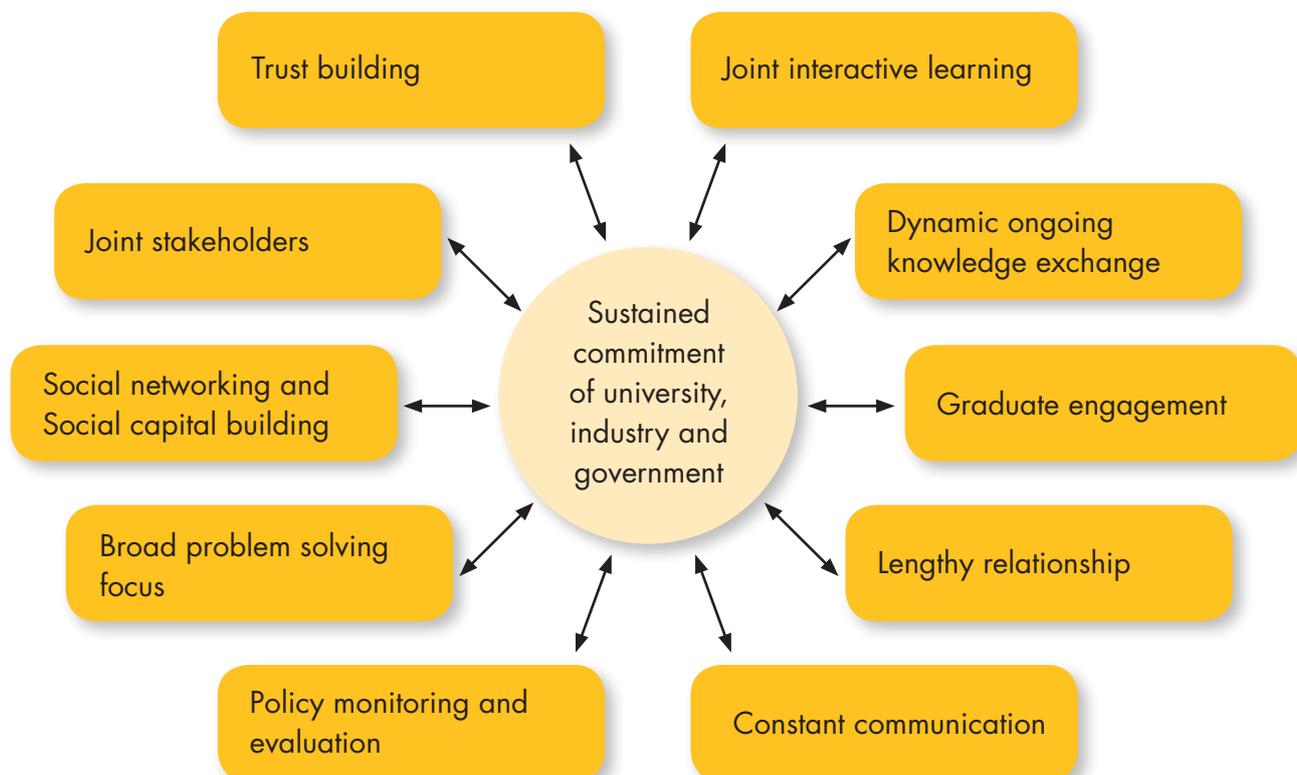
Regional and Local Engagement

It is in the field of knowledge transfer and engagement that the regional role of universities has been most highlighted (Boucher et al 2003, Charles 2003 and 2006, IHEP 2007, Arbo and Benneworth 2008). There is an obvious potential link between a university's contribution to innovation and its contribution to a region's development (Smith 2007). This link is reflected in the growing focus of European government regional policies since the 1980s upon innovation and technology development and the exploitation of university knowledge (particularly with the support of the European Commission). World-wide, the models of MIT (O'Shea et al 2007), Silicon Valley and North Carolina in the US have become iconic along with the Cambridge Phenomena (Segal, Quince and Wicksteed 1985) in the UK. There are, however, many other European examples on offer, for example, Linköping in Sweden, Turku in Finland and Twente in the Netherlands (Braun and Diensberg 2007). The label of the 'Entrepreneurial University' is therefore frequently associated with the notion of the university as a regional innovation hub (Sole-Parellada et al 2001). It appears to be widely accepted in this context that successful innovation necessarily involves a highly interactive process of engagement between universities, industry and government. This engagement process has been labelled the Triple Helix Model (Benner and Sandstrom 2000, Shinn 2002, Leydesdorff and Meyer 2003, Zhou 2008, Etzkowitz 2008).

The model portrays an interactive process of research funding through private and public partnerships focused upon development out of research and learning, by all partners, from this process. This model is not solely a regional one, but has a strong regional orientation particularly when it engages with small and medium sized firms. It assumes that entrepreneurs will work in the university and academic staff in the company, that the partnership may also link with other sources of funding and that there will be clear patterns of co-ordination (Etkovitz 2008). Its full manifestation can be characterised as in Figure 3. The model is also associated with the Mode 2 concept of a university discussed later below (Gibbons et al 1994, Novotny 2003). While universities now frequently have 'professionally managed' offices for regional development and knowledge transfer issues, it has been argued above (Dooley and Kirk 2007) that while they are a window to the outside world they may constitute a barrier to total academic staff commitment and ownership which is at the heart of Figure 3.

FIGURE 3 - THE BASIS OF THE TRIPLE HELIX MODEL

Higher Education, Government and Private Sector Partnership



While much of the discussion of the Triple Helix model is narrowly focused upon knowledge transfer, universities have increasingly been drawn into a playing a stronger regional social and economic development role in many other ways (Arbo and Benneworth 2008). While they are often important employees and indirect job generators in a region in their own right, they can take on the mantle of being a leading network hub for focus upon regional development issues. They can act as animateurs for the development of sustainable networks of exchange on important issues. They can focus upon supplying skilled young people to a region and are a mechanism for enhancing social mobility. Through their outreach education and training programmes, they can seek to bring forward the future and act as a major learning source for regional stakeholders. They can, through their reputation and specialist expertise, play an important role in attracting investment to a region. Via research they throw independent light on key development issues and act as a means for independent evaluation. They are often an exporter, bringing in income to a region: but also, through their internationalisation work, they can bring major contacts into the locality and thus raise its visibility and capacity to build networks abroad. They also often act as an intermediary in articulating regional development issues to central government in areas of technology policy, education and skills development and competition policy. Overall they may take a central place in the development of many aspects of a region's culture.



There is clear evidence that across Europe universities are taking on more of the role of bridging local with global (Arbo and Benneworth 2008). Whether an individual university wishes to play a transformational role as a regional change agent is, however, an issue for its individual mission and strategy.

University Funding, Enterprise, Autonomy and Academic Freedom

It was noted above that throughout the world there has been a gradual evolution in the way that universities are funded, as public budgets fail to take the strain of rapidly growing student numbers (Zumeta 2007, Williams 2009). In the UK, for example, base public funding provides only 40% of university resource, the remainder expected to come from a variety of sources including hypothecated (targeted) public programmes, European or local government funding, student fees (Greenaway and Haynes 2003), research funding, contract work, foundations, alumni donations and catering and other services. Altogether some £7bn. of £18bn. UK university income comes from non-state sources (Universities UK 2007). There is no space in this paper to explore the intricacies of higher education funding, widely debated elsewhere (Cunningham et al 2000, Rolfe 2001, De Ziwa 2005, Douglas 2008, Williams 2009), but the issue is of relevance to the entrepreneurial concept in a number of ways. Most important is the degree to which funding impinges upon the autonomy of institutions (Darling et al 1989, Li-Chuan Chiang 2004). Here, there has been, and continues to be, much debate. On the one hand there are those who argue that public funding constrains academic freedom particularly as it becomes more directive and that diversified income sources ensure a higher degree of freedom (Li-Chuan Chiang 2004). Others argue that funding raised from elsewhere, particularly from the private sector, in many cases has strings attached to it (Leslie and Ramey 1998).

In reality the detail is more complex. Much depends upon the mix of funding: for example, monies from alumni, charitable donations and research grants from independent bodies may be less likely to impinge upon autonomy than commercial contracts. More subtly, much also depends upon the impact of funding arrangements on choice of personnel (freedom to appoint staff and students), freedom to determine curriculum and the balance of research and teaching, the make-up of governing boards and the processes of accountability which impact upon freedom to develop (Li Chaun Chiang 2004). A major issue in funding overall is the degree to which it impinges on the fulfilment of the university mission (Hearn 2003).

Funding strategies are therefore becoming more complex, with governments forcing the issue by giving matching incentives to fund-raising from private sources¹⁰. The search for 'buying autonomy' has created considerable interest in the cost benefit of 'fund raising' through development offices (Baade and Sundberg 1996) and has caused reflection upon the relatively poor performance of European universities in tracking, building relationships with and raising funds from, alumni compared with their American counterparts. (Thomas 2004). In some countries, in response to the above scenario, the privatisation of universities is very much on the public agenda (IHEP 2009).

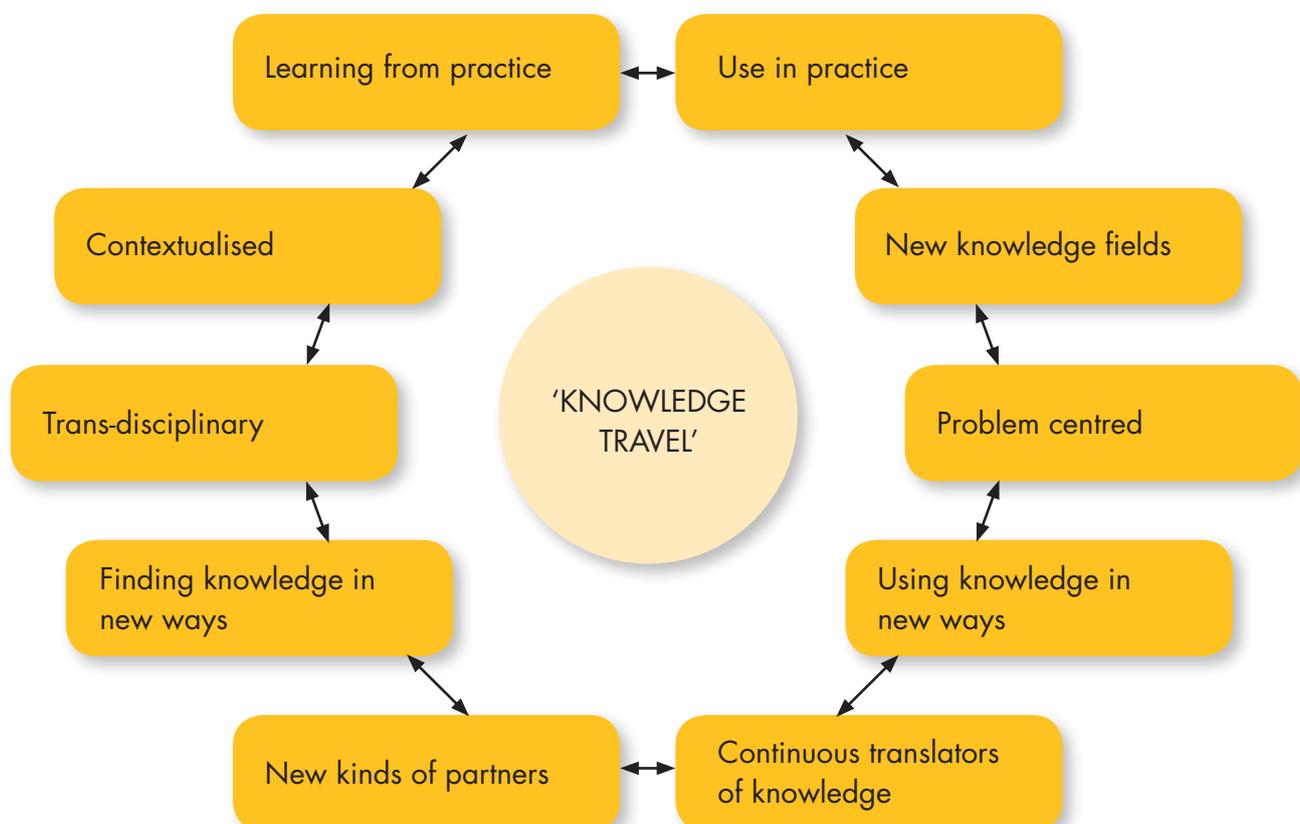
Altogether, the financing issue is yet another central focus for entrepreneurial management, with considerable risk attached, not only of a simple resource nature.

¹⁰For example in Finland the government has recently introduced an incentive programme to raising of finance by leveraging private with public funding.

Creating Public Value

The issues discussed above demonstrate the increasingly complex and uncertain task environment facing higher education. University responses to this have heightened the intellectual controversy concerning the central 'idea' of a university (Slaughter and Leslie 1997, Gilbert 2000, Graham 2002, Kirp 2004). At the heart of the debate is the notion that universities are being driven by a range of market forces into commercial organisations focused upon the 'sale' or 'capitalisation' of knowledge. The latter is defined as 'knowledge created for use as well as for disciplinary advance and linked with economic and social advance' (Etzkowitz 2004). Some writers go so far as to describe universities as 'knowledge factories' (Lazzeroni and Piccaluga 2003). Thus the intellectual autonomy of the institution and curiosity-based research in particular is seen to be eroded in favour of 'value in use' (Albert 2003). This has been characterised as a move from a Mode 1 model where the university was an independent space for discovery, beyond control, with government, as key funder, the main guarantor, to a Mode 2 typology of an organisation engaged in high levels of interaction with a range of stakeholders where sustainability is a function of utilitarianism as seen through the eyes of the state, private partners and indeed society as a whole (Gibbons et al 1994, Dooley and Kirk 2007, Rinne and Koivula 2009). Funding in this Mode comes from an ever-widening range of sources. The university sees its offer as a public good embracing the concept of 'knowledge travel' as set out in Figure 4 (Barnett 2000) and moving away from its dependency upon 'credentialism' (Rinne and Koivula 2009). The University moves from being a niche organisation towards a more open and comprehensive organisation (Nowotny, Scott and Gobbins, 2001).

FIGURE 4 - THE MODE 2 UNIVERSITY AND THE NEW FOCI OF KNOWLEDGE





The Mode 2 characterisation firmly places the university within the concept of being an instrument for creating 'public value' (Nowotny et al 2003, Alperovetz et al 2005). This concept developed by Mark Moore of Harvard University (Moore 1995) has commanded a great deal of attention world-wide, and particularly from government in the UK (Kelly et al 2007). It is seen as an alternative to the measurement of outcomes from public investment via cost benefit analysis. The three key essences of the model are: a strong initial planning focus upon the value of the proposed 'offer' to the community; the creation of legitimacy for courses of action by full engagement of the relevant community stakeholders; and ensuring that the plans and proposals are clearly within the capacity, goals and values of the institution. Of key importance to the changing university scenario described earlier in this chapter is the concept's emphasis upon gaining legitimacy by wide engagement of interested parties in the process of doing things.

3. THE ENTREPRENEURIAL ORGANISATIONAL CHALLENGE

The Entrepreneurial Organisation Concept

Much emphasis has been placed by many of the referenced authors to the need for a university to be highly flexible in its response to the environment described above (Vaira 2004). The above paragraphs have briefly characterised some of the responses. The combination of different demands being made by government, still a major source of funding, via processes of quality measures rather than direct control, combined with the competitive market and stakeholder demands described above, have presented considerable challenges to university organisation design around the world (OECD 2005 and 2007, Olssen and Peters 2005, Pan 2007, Pilbeam 2008). Contingency organisational theory demands that institutions are designed around the specific nature of their task environment and thereafter flexibly adjust in response to change in the environment (Lawrence, and Lorsch 1986, Covin and Slevin 1991, Namen and Slaven, 1993). Many writers have focused upon this issue in the higher education context (Coaldrake 2001, Salmi 2001).

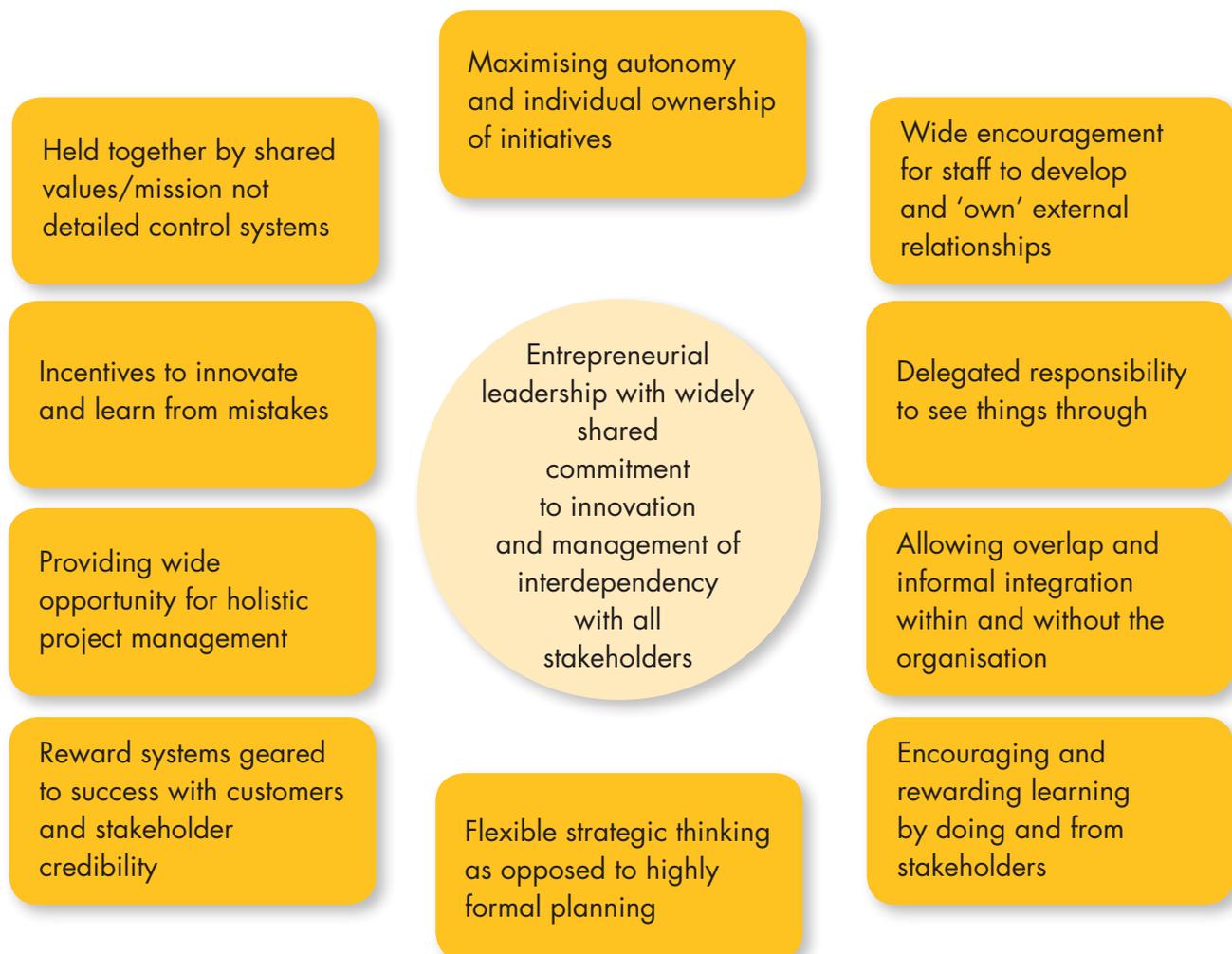
Burton Clark, perhaps the most influential writer in this field (2004) argues, on the basis of a number of case studies (including two UK universities), for five key components of entrepreneurial university organisation:

- a strong central steering core to embrace management groups and academics;
- an expanded development periphery involving a growth of units that reach out beyond the traditional areas in the university;
- diversity in the funding base, not only by use of government third stream funding but from a wide variety of sources;
- a stimulated academic heartland with academics committed to the entrepreneurial concept; and
- an integrated entrepreneurial culture defined in terms of common commitment to change.

While his arguments can clearly be seen to be in response to some of the pressures noted above, the depth of his research has been criticised (Deem 2001, Finlay 2004). Moreover, no strong conceptual argument (as opposed to an empirical conclusion) is put forward to link this with his call for institutions to be more focused upon innovation, taking risks and dealing with uncertainty. Etzkowitz, another leading writer on this issue, (2004) puts forward five propositions concerning the entrepreneurial university concept namely that such institutions are focused upon: the capitalisation of knowledge; managing interdependence with industry and government; are nevertheless independent of any particular sphere; are 'hybrid' in managing the tension between independence and interdependence; and embody reflexivity, involving continuous renewal of internal structures.

The observations of these writers and others can be plotted against a broader conceptual frame setting out key components of an organisation moving to cope entrepreneurially with high levels of uncertainty and complexity. Such an organisation is designed to maximise the use of effective entrepreneurial behaviour appropriate to the task environment (Lawrence and Lorsch 1986, Covin and Slevin 1991). Figure 5 presents such a framework for evaluation of the broad entrepreneurial challenge to university organisation design.

FIGURE 5 - THE UNIVERSITY AS AN ENTREPRENEURIAL ORGANISATION





It is important to distinguish the entrepreneurial model from other organisational approaches/concepts introduced into academe over the past decade in particular the 'new managerialism' (Deem 1998 and 2001), the 'corporate business model', 'professionalism' (Blackmore and Blackwell 2006 Kolsaker 2008) and 'marketisation' (Bok 2003). Entrepreneurial organisation is not synonymous with any of these. The entrepreneurial concept stretches well beyond the business and new venture context. It is distinct from, but possibly overlapping with, components of the managerialist concept as it is to be associated with a certain style of leadership (see below); but managerialism has become associated with many of the 'rules' of corporate bureaucracy namely: highly formal planning processes and information systems; tight accountability and standard setting; audits; order; and demarcation.

'Professionalism' is clearly associated to some degree with this by the bringing into universities a new culture of professional managers (Sporn 1996) leading, some argue, to the possible marginalisation of academics (Deem 2007). This contrasts with an entrepreneurial emphasis upon enhancing the capacity of the existing body of academe to lead change. Finally, the entrepreneurship concept is not at all wholly synonymous with 'marketisation' either in the pure commercial sense of setting up the university to 'sell' know-how nor in the sense of adopting business and other approaches to reaching customers although it may embody appropriate elements of both at times. Certainly, the concepts of 'branding' the university, image creation and reaching out to the public through various channels especially through the media are important.

The Organisation Development Challenges

The frame above (Figure 5) can be used to explore some of organisation development challenges noted above. Entrepreneurial organisations have a strong bottom-up development and initiative focus, empowering individuals at all levels of the organisation to enjoy freedom for action. The dominant controlling and motivating parameter is not systems but shared mission, values and culture and trust (Davies 2001, Daumard, 2001). Thus, a major challenge and opportunity to universities in this respect is to build entrepreneurship upon the considerable freedom enjoyed by departments and individuals, traditionally embodied in the notion of a 'community of scholars' moving this more towards a 'community of practice' (Todorovic et al 2005, Wenger 1998). In this respect there is a diverse number of issues. Universities can be characterised as pluralistic organisations with different departments having very different external orientations and indeed academic values. While a strong central steering group, as Clark has argued, may therefore be desirable in reinforcing the mission, the major challenge is that of placing ownership of innovation and change with academic departments, finding champions therein who, perhaps incrementally, can move innovation up the departmental agenda. This is not an easy task. There is evidence to suggest that departments are often heavily focused upon 'defending their patch' within the present organisation system rather than upon innovating (Bryman 2007).

It has already been argued above that establishing intermediary professional units to 'manage' a range of externally focused activities, in the absence of departmental initiative, may emasculate the capacity and motivation for academics to take up challenges in their own distinct environment. In stimulating academic initiative, formal strategic planning and mission statements may be less important than encouragement of flexible strategic thinking, integrating action with strategy, when confronting opportunity and threats

(Courtney et al 1999). Shattock argues that, in the present climate, strategic planning should be 'a framework only for opportunistic decision making' (Shattock 2000). Entrepreneurial innovation will also require flexibility in organisation design to allow the growth of overlap and interdependency between different departments, projects and even individuals in adjusting flexibly to the demands of society for new combinations of knowledge. This may lead to Schumpeterian 'creative destruction' (Schumpeter 1934), as those departments slow to adapt, fade or merge into new units. Overall, in this scenario, there will be a challenge to the reward system in the organisation in moving it towards recognition of innovation, successful integration of knowledge and relevance to the wider community.

While the above may challenge the university in the way that it measures excellence (Amaral and Magalhaes 2003, Schuetze 2007), incorporating the concept of 'public value' as described above, does not necessarily, as is sometimes argued (Mawditt 1998, Berglund 2008), threaten emphasis upon excellence in research, nor the essential 'idea' of a university. Etzkowitz, for example, argues that the current concern for the wider embedding of knowledge takes universities back to their original objectives. Others argue that the new 'dna' of knowledge is 'polyvalent' and intellectual with the interdisciplinary, theoretical and practical merging together (Viale et al 2005). In a seminal paper for the US Kauffmann Foundation (2008), Michael Crow, the president of Arizona State University a major US research university, argues the case for the 'New American Research University' with academic enterprise as the 'organising principle'. His targets for such an organisation are:

- academic excellence focused upon and backed up by maximising social impact;
- competitiveness;
- agility;
- adaptability;
- inclusivity;
- focussing globally yet also locally;
- responsiveness to changing needs;
- speedy decision making capability.

His view of the university is as a 'force for societal transformation' with a culture of academic enterprise focused upon user-inspired relevance and transcending disciplinary based limitations. The concept of the 'citizen scholar', also increasingly debated in the US (Cherwitz 2005) aligns with this where the focus is upon empowerment of the individual. These concepts have major organisational and physical design, as well as intellectual, implications.

Governance and the Entrepreneurial University

It is the view of the UK Committee of University Chairs (CUC) that stakeholders external to the university have a major role in holding it to account (CUC 2000, 2004, 2009). The main mechanism for this in most universities across the world is the council or board of governors (Dearing 1997, CUC 2000, Chan and Lo 2007). There has been much debate internationally on governance in universities (OECD 2003, Ka Ho Mok 2005, Kohler and Huber 2006, Bleiklie and Kogan 2007, Schonfield 2009, Mora and Vieira 2009). This has focused upon a number of issues of which the power of the council/board in approving



and shaping a university's strategy is major. (Navarro et al 2003, Shattock 2006 Chapter 4). The debate explores: the relationship between the chair of the council/board and the universities vice chancellor or principal; the size and composition of the board¹¹ and the balance of its representation; what should be its key performance indicators; and, perhaps most important, in the context of this paper, the board as an instrument for leading change (Lombardiet al 2002).

In line with the ideas of Clark (2004), there have been moves to streamline boards; and to strengthen their power and links with the VC or CEO and his/her management team. In the UK this was a main recommendation of the 1997 National Committee of Enquiry into Higher Education (Dearing 1997). This led to internal changes in many universities, with a strengthening of the power of an executive team at the expense of the traditional academic representative body, the senate. This has also been accompanied, in the UK and also more universally, by internal changes aimed at reducing bureaucracy and removing a heavy dependency upon committee structures which are said to impede innovation. There has also been a broad trend towards the appointment of professional administrators reporting to a small senior executive team. All of these changes are contested by some, on the grounds of weakening democracy in the institution and marginalising the concept of a community of scholars (Graham 2002, Kirp 2003, Zhou 2008, Berglund 2008). They have, however, been counterbalanced in some cases by processes of greater devolution to academic departments.

In the context of this paper's focus upon entrepreneurship, the issue of governance can be assessed in several ways. First, by the degree to which streamlining the board enhances the university's engagement with external stakeholders across the whole institution, building the 'learning organisation' capacity as described above (Miller and Katz 2004). Second, whether, as a result, the university becomes more sensitive in its long term strategies to wider societal needs. Third, whether there is an impact on decision-making structures throughout the organisation, as discussed above, other than at the top. And, overall, whether it increases the capacity of the organisation to innovate. There is currently little research that addresses these issues in the context of the effectiveness of governance arrangements.

The Individual Academic Entrepreneur

Within every university, and perhaps within every department, there will be some academics who will be continuously looking outward, harvesting knowledge and experience from a wider range of stakeholders than can be found within the 'halls of academe' (Bird and Allen 1989). There will also be some who in general 'buy into' the concept of the entrepreneurial university as outlined above, although they may have a widely different balance of views as to what this means in both concept and practice (Duberley et al 2007, Mcinnis 2001, Meyer and Evans 2007). Moreover academics find themselves in very different types of organisation within the sector with different cultures and views of what constitutes 'excellence' (Finlay 2004). Etzkowitz, for example, has radically posited the notion of research groups as 'quasi firms' (2003). While there may have been an erosion of the power of academics in some universities the individual

¹¹In the UK the Dearing report 1997 (Higher Education in the Learning Society) led to the streamlining of boards.

department and staff member still has considerable independence. In what has been described as the traditional liberal university model (Delanty 2001) the degree of interaction with the external environment was wholly an individual choice. As universities in general (some more than others) move to what Delanty describes as a reflexive model (based upon exchange and reciprocity between knowledge producers and users) there is more scope for rewarding the academic entrepreneur. In the scientific knowledge transfer context, described earlier in this chapter, this becomes important as it is the personal academic interface that is elevated above the impact of physical and administrative structures, as characterised by science and technology parks and technology transfer offices (Klofsten and Jones-Evans 2000, Franklin et al 2001).

The evidence suggests that conflicting interests for academics do arise in the arena of practical engagement, with industry in particular, and that there are career uncertainties for those academics who actively engage (Duberley, Cohen and Leeson 2007). But the same study demonstrates that scientists often view the prospect of commercialisation of their work as a means of its full realisation, and demonstration of their own potential. While the increased blurring of the distinction between pure and applied science seems to be more widely accepted, the key issues for academics seem to be more about resources, career concerns, processes and non-financial, as well as financial, rewards. Overall, the dynamics of the changes described in earlier parts of this paper have major implications for the design of career structures in academe.

4. THE LEADERSHIP CHALLENGE

Summarising the Basic Challenges

The previous sections of this paper have painted a broad scenario of factors that seem to be moving many universities towards a more entrepreneurial mode and have also reviewed organisation and individual development issues impinging on the institution's possible response. The US Department of Education sees this as a major test of leadership (2006). For those in a position to lead this change there are many tensions. Sir David Watson in a contribution to a 'Consultation' workshop organised by the UK Council for Industry and Higher Education and the Society for Research into Higher Education summed these up in a UK context as: Conservative v Radical; Competitive v Collegiate; Commercial v Charitable; Autonomous v Accountable; Traditional v Innovative; Local v International; and Public v Private (CIHE and SRHE 2008)). In the same publication Cubie, Chair of the Committee of University Chairs (CUC) notes the dichotomies between the entrepreneurial culture and the audit and managerial culture (pp.14-17). In reality the distinctions are much finer yet deeper. There are basic conceptual as well as ideological confusions about the nature of the entrepreneurial paradigm itself, which fundamentally affect individual academic attitudes (Ma 2000, Mautner 2005).

Despite recent changes, there remains in many organisations a tension between the academic collegiate view of a community of scholars (where disciplines are the 'invisible college') backed up by numerous committee activities and a powerful senate or academic council (in the traditional model of a university) and streamlined executive decision-making teams capable of more rapid response to change (Meyer and Evans 2007). Resources are increasingly scarce and fought over for maintenance rather than change (Clark 2004). The specialised administrative units focused upon outreach activities such as regional development, technology transfer, knowledge exchange, alumni development and careers, noted above, may compete



for resources and endeavour to build their own empires, limiting potential for synergy between them and limiting the capacity to give real ownership to academics. Reaching out internationally, and attracting new resource, demands large amounts of executive time. Thomas, for example found that seeking external resource in the US could take up to 30 per cent of deans and heads of department time (Thomas 2004).

Managing a wider range of stakeholders, multi-actors, multi-interfaces and multi-objectives constitutes a major leadership challenge (Maak 2007, Bryman 2007). In the UK the restructuring of university councils and boards and their empowerment has added to this pressure. Despite these changes there is a strong sense of academic independence rooted in departments so that a distinctive leadership characteristic of departmental heads can be seen as their ability to 'defend the department' (Bryman 2007). In this context the challenge can be seen to encourage innovative leadership throughout the organisation (Mcinnis 2001, Greenhalgh 2008). There is therefore the issue of challenging certain aspects of the 'new managerialism' particularly those that control rather than stimulate risk and innovation. There is evidence that academics are uncomfortable with over-use of authority, finance led decisions, audit trails involving more paper work and being cut off from decision-making (Deem 2007).

The Entrepreneurial Leadership Concept

A key issue is the degree to which the entrepreneurial leader concept sits with the above challenge. The concept itself must also fit with the entrepreneurial organisation framework set out earlier. From the literature (Schein 1992, Kilgour 1993, Kuratko and Hornsby 1999, Dulewicz 2000, Mcinnis 2001, Vecchio 2003, Gupta et al 2004) a matching frame can be drawn as in Figure 6 below, which contextualises key characteristics against the challenges above and the frame in Figure 5. The result has much in common with 'transformational leadership' (Bass 1990, Epitropaki 2001). Intellectual and visionary leadership is needed for two major reasons: first to remove ideological and 'concept of a university' barriers associated with the entrepreneurial paradigm; and second to carry this through in the particular context of the nature of the university itself and its existing culture, mission and strategy. This is not to infer a concentration upon creating 'new' formal strategy statements (Shattock 2004); substituting strategy for leadership has been warned against (Watson 2008). Entrepreneurial change is achieved by doing, not by paper.

FIGURE 6 - THE ENTREPRENEURIAL LEADER



In the organisational climate described above, and perhaps in academe in general, leadership is a concept to be earned not formally designated. Managing the balance of relationships between formally engaged stakeholders (the board or council) and other external stakeholders and internal stakeholders is a complex process (Frooman 1999). Super complexity (CIHE and SRHE 2008) is within, as well as without, the organisation. A key challenge will be to create entrepreneurial role models within departments and gradually to build a culture of rewarding innovation in every department rather than a culture of defence. This will demand capacity to identify potential change agents and build teams around them, encourage risk and protect them. Shared purpose is thus built by example and reward.

In the UK it has been argued that leadership in the departmental context is low status with relatively few rewards for heads of programmes or chairing departmental committees (Bryman 2007). Identifying potential departmental change agents will demand an ability to recognise different styles of leadership and different attitudes associated with enterprising 'clever people' (Goffee and Jones 2007) with competency to build from them in different ways. As part of vision-building there will need to be clear articulation of the concept of innovation and its applicability to all disciplines and departments.

The overall mission would be to infuse departments with entrepreneurial values. The key instrument for creating transformation will be finding resource to support innovation in departments, particularly so in the present climate. The leader in this respect will need to be the bridge between stakeholders and departments and between bottom-up and top down initiatives (Kweik 2008): as such the persuader and fixer role will be



dominant. Some resource may have to be found for new units some of which may reach across traditional discipline and departmental boundaries. But the key will be in building the capacity of academics (Blackmore and Blackwell 2008) incrementally from existing practice.

Building Appropriately Upon Existing Capacity

In all universities there exists a range of activities that could be broadly described as part of entrepreneurial response to the environments described earlier. Given the diversity of vision, mission, resource, status and tradition these will vary from one institution to another. A key to the practice of entrepreneurial strategy is an initial appraisal of the existing capacity of the organisation upon which to build. Such an appraisal touches upon all of the areas of response to the environment covered above, including an analysis of the way that the existing academic mission of the university, its governance, funding (leverage), strategy and organisation structure fits with, or constrains, an entrepreneurial model and the capacity for change.

Among the possible range of existing activity areas to be explored are:

- knowledge and technology transfer policies and activities (Dill 1995, Geuna and Muscio 2008);
- the effectiveness of any physical infrastructure that relates to this, for example science and/or technology parks and the associated existence of incubators (Gaynor 2001, Bergek and Norrman 2008) and venture funds;
- new venture programmes; embedded entrepreneurship programme or enterprising pedagogy activity within departments;
- careers department and student society activity in this respect;
- alumni policies and programme;
- entrepreneurial curriculum and pedagogy development within departments;
- the work of interdisciplinary centres;
- regional and local partnerships;
- focus upon social and community issues (Bloom 2006);
- international activities and relationships;
- links and partnerships with entrepreneurs and business in general including applied research and consultancy activity.

The results of such an appraisal should also reveal the degree of existing interface and potential synergy from different activities. For example student activities may link with departmental project work, with external project work involving local entrepreneurs and may be used for wider promotional activity. Technology transfer activities can link with new venture education and training programmes and engage the entrepreneur community as mentors. Careers departments can work in partnership with academic departments. Such an appraisal can also be used to identify potential future entrepreneurial champions in the organisation (Mendes et al 2006).

5. ENTREPRENEURIAL LEADERSHIP DEVELOPMENT AND PROGRAMME DESIGN

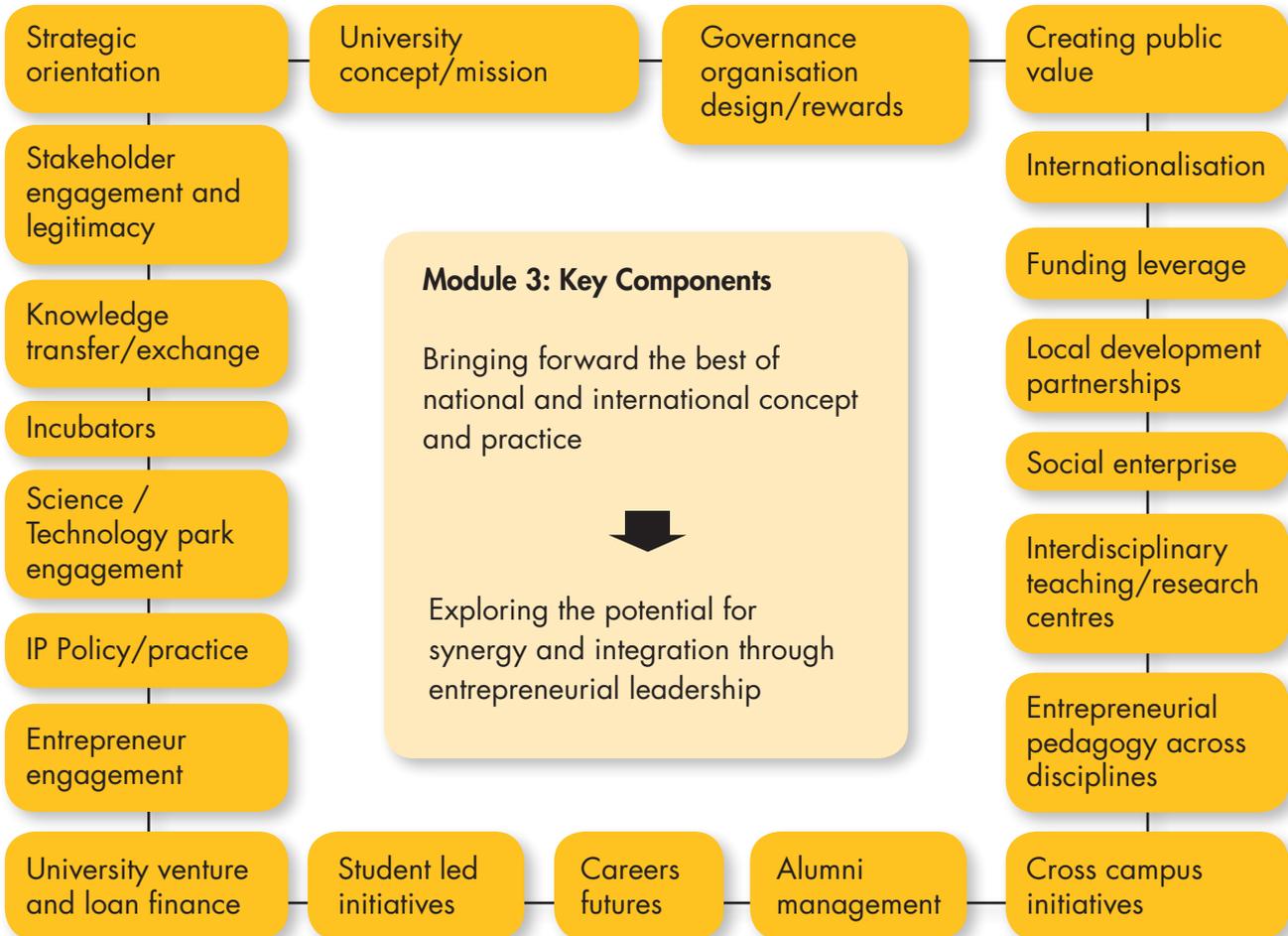
The distinctive nature of the entrepreneurial leadership challenge arising from the changing paradigm of the university has been described above. Richard Lambert's review of Business-University collaboration in the UK, for example, found that the variety of stakeholders and different demands made upon universities made the leadership role the most complex in the field (Lambert 2003). Any programme designed to meet this challenge has to be targeted upon senior personnel with sufficient visibility and status in the organisation to take responsibility alongside senior management, or as part of the management team, for facilitating change (Blackmore and Blackwell 2006). Such a programme, as befits the nature of an entrepreneurial venture, will need to be focused upon action and learning from action bringing together all key aspects of the leadership challenge as described above.

The Entrepreneurial University Leadership Programme is therefore structured into four modules with space between for action and learning. The first module aims to build intellectual capacity to absorb the concept of the entrepreneurial university as it is being configured around the world and as it is being adopted and adapted by a diversity of different higher education institutions in different cultural and international policy contexts. A key component is the development of understanding of how in practice different institutions and their leaders are redesigning their organisations to cope with the different national and international pressures; also to understand how this is being supported or otherwise by policy makers and public and private organisations and their perceptions on the key issues. Overall, a key aim is to explore how a university's activity in this sphere creates public value.

The second module explores the nature of the leadership challenge as described above focusing upon both personal, relational and institutional development. In particular the focus will be upon the issue of 'leading innovation from the bottom', creating leaders and empowering academics to take risks and build rewards around new ways of doing things. A key component as argued above will be network and relationship management and building trust-based relationships with the local, regional, national and international environment.

The third module focuses upon the best concept and practice in key activity areas described in Figure 7 below, bringing together the best of UK and international experience. This will allow leaders to participate, on a carousel basis, in workshops focused upon the important areas of development interest in their own institution. This will be followed by optional tailored international visits to explore in more detail areas of particular interest.

FIGURE 7 - EXPLORING BEST CONCEPT AND PRACTICE



The final module will be focused upon individual action plans and strategies for development of appropriate stakeholder and policy relationships. It will also provide an opportunity to raise and debate a number of outstanding issues arising from the programme with a range of representatives from business, government and social enterprise.

As noted above the programme is focused upon action learning. Between each module participants will explore relevant issues in their own institution and environment both to carry forward from the previous module and to prepare for the next. After Module 1 they will be asked to review the entrepreneurial and public value concepts and their relationship to the mission, strategies, governance and organisation of their own institution. After Module 2 they will be asked to set out the key leadership challenges they see for themselves and also to carry out a preliminary audit of entrepreneurial activity in their own institution in preparation for determining their selections in the carousel workshops. After Module 3 they will take an optional study visit as identified above but also prepare the outline of a strategy for their own organisation which will be refined with mentor support during the programme. The programme evaluation will focus primarily upon actions taken or attempted and what has been learned from them.

6. CONCLUSION AND THE FIT INTO THE NCGE POLICY FRAMEWORK

The paper began with an acknowledgement that the focus was upon building a strong conceptual base for action, namely, the development of a programme focused upon 'Leading the Entrepreneurial University'. The pressures upon the higher education sector internationally and its responses have been summarised and the related organisation development impacts have been set out, along with the resultant leadership challenges. Finally, there was a brief summary of the programme and of the argument that there is considerable potential in the university sector to create synergy between the very many activities currently to be observed in the responses of individual institutions to the various challenges. The scenario painted in the paper is arguably a global one, with many related references: but there has also been much reference to the UK in view of the location of the programme.

The paper set out to add value to the considerable debate by seeking to conceptualise the concepts of the entrepreneurial organisation and entrepreneurial leadership as a basis for analysis. This is needed for a number of reasons. Firstly to move the debate on the entrepreneurial university away from the narrow focus upon commercialisation of intellectual property and the fears of 'prostitution' of the 'idea' of a university that results from this (Bok 2003, Kirp 2003). Entrepreneurship has been located as an individual and organisational behavioural and development response to uncertainty and complexity broadly relevant to citizens and organisations of all kinds, private, public and autonomous.

Secondly, to provide a stronger basis for bringing together all of the activities of a university that are reflective of its response to an environment of growing uncertainty and complexity. The entrepreneurial label is often attached to only certain aspects of an institution's activity, for example knowledge transfer, regional engagement, student or staff new venturing, problem centred learning and so on.

Thirdly, to provide a stronger basis for an individual university to 'situate' itself within the concept. It was noted at the beginning of the paper that the university sector now embraces a wide variety of different 'typologies' of institutions with different missions and strategies. Moreover, they are undoubtedly 'led' in a variety of different ways. There are very different 'power' relationships between stakeholder councils/boards and academic 'senates' and different balances of power between the vice chancellor or principal, his/her team, intermediate professionals and the authority of the individual department and autonomy of the individual academic. Any individual on a programme faced with the transfer of learning into action and wide organisational reflection will need to adapt the approach taken appropriately to the distinctive existing structure, organisational and leadership characteristics and values of the organisation. The entrepreneurial organisation and leadership concepts described above are not therefore recipes for change but frameworks upon which to reflect in guiding change appropriately.



The arguments, concepts and programme design issues noted above also have, importantly, to be related to the overall objectives of the UK NCGE as the main driver of the programme. Its overall mission is to develop entrepreneurship across all disciplines in all UK universities (www.ncge.org.uk). It pursues this mission in a number of ways including: the creation of widespread student awareness; the building of understanding and motivation of key stakeholders, internal and external to the university; the development of staff capacities via an International Entrepreneurship Educators Programme (IEEP); and the monitoring of practice and progress nationally and internationally to share with all stakeholders. The sustainable impact of these activities is strongly dependent upon associated elements of institutional change. It is upon this that the Entrepreneurial University Leadership Programme is focused.

REFERENCES

- Agrawal, A., (2001)** 'University-to-industry knowledge transfer: literature review and unanswered questions'. *International Journal of Management Reviews*, Vol. 3, Issue 4, pp. 285-302.
- Alaasarela, E., Fallemies, M., Halkosaari, T., Huhta, T., Jansson, L., Jylha, E., Lahtela, M., Nivala, K., Nokso-Koiovisto, P., Telkki, M. (2002)** 'Higher Education as a pathway to entrepreneurship'. Keski-Pohjanmann Ammatikorkeakoulu, Finland
- Albert, M. (2003)** 'Universities and the market economy: The differential impact on knowledge production in sociology and economics'. *Higher Education* Volume 45 pp.147 - 182
- Albert, P., Gaynor, L. (2001)** 'Incubators – growing up, moving out'. A review of the literature. Chair of High Tech Entrepreneurship. CERAM, December 2001.
- Alperovitz, G., Howard, T. (2005)** 'The Next Wave: Building a University Civic Engagement Service for the Twenty-First Century'. *Journal of Higher Education Outreach and Engagement*, Vol. 10, No. 2, p. 141
- Altbach, P.G., Knight, J. (2006)** 'The Internationalization of Higher Education: Motivations and Realities'. The NEA 2006 Almanac of Higher Education. Washington: NEA.
- Altbach, P.G. (2005)** 'Globalization and the University: Myths and Realities in an Unequal World'. EPI, 2005. *Global Higher Education Rankings. Affordability and Accessibility in Comparative Perspective*. Washington: EPI, www.educationalpolicy.org
- Amaral, A. and Magalhaes, A. (2003)** 'The Triple Crisis of the University and its Reinvention'. *Higher Education Policy* Volume 16 pp. 239-253
- Arbo, P. and Benneworth, P. (2008)** 'Understanding the regional contribution of higher education institutions: A literature review'. A research report prepared for the OECD Institutional Management in Higher Education Programme 'The contribution of higher education to regional development'. OECD Paris
- Armbruster, C. (2008)** 'Research Universities: autonomy and self-reliance after the Entrepreneurial University'. *Policy Futures in Education*, 6(4), pp. 372-389
- AUQA.(2005)** Proceedings of the Australian Universities Quality Forum Engaging Communities Sydney, Australia, 6-8th July 2005 AUQA Occasional Publications Number 5. Melbourne. Australia. Universities Quality Agency
- Baade, R.A. and Sundberg, J.O. (1996)** 'What Determines Alumni Generosity?' *Economics of Education Review*, Vol. 15, No. 1, pp. 75-81.
- Baar, N.A. (1998)** 'Higher education in Australia and Britain – what lessons?' *Australian economic review*, 31 (2), pp. 179-188. London: LSE Research Online.
- Baldini, N. et al (2006)** 'Institutional changes and the commercialization of academic, knowledge: A study of Italian universities' patenting activities between 1965 and 2002'. *Research Policy* 35 (2006), pp. 518–532
- Barnett, R. (2000)** 'University knowledge in an age of supercomplexity'. *Higher Education*, 40, pp. 409–422.
- Barrie, S.C. (2007)** 'A conceptual framework for the teaching and learning of generic graduate attributes'. *Studies in Higher Education*, Volume 32, Issue 4 August, pp. 439 - 458
- Barsony, J. (2003)** 'Towards the Entrepreneurial University'. SEFI 2003 Conference – Global Engineer: Education and Training for Mobility.
- Bass, B. and Riggio, R.E. (2008)** 'Transformational Leadership'. Taylor and Francis



- Becher, T. and Trowler, P.R. (2007)** 'Academic Tribes and Territories. Intellectual enquiry and the culture of discipline'. Society for Research into Higher Education and Open University Press
- Benner, M. and Sandstrom, U. (2000)** 'Institutionalizing the triple helix: research funding and norms in the academic system'. *Research Policy* 29 2000, pp. 291–301.
- Bergek, A. and Norrman, C. (2008)** 'Incubator best practice: A framework'. *Technovation* 28 (2008), pp. 20–28.
- Berglund, E. (2008)** 'I Wanted to Be an Academic, Not A Creative'. *Notes on Universities and the New Capitalism. Ephemera, theory & politics in organization. Vol. 8(3): 232-23.*
- Bernasconi, A. (2005)** 'University Entrepreneurship in a Developing Country: The Case of the P. Universidad Católica de Chile'. 1985-2000. *Higher Education, Vol. 50, No. 2 (Sep., 2005), pp. 247-274*
- Bird, B.J. and Allen, D.N. (1989)** 'Faculty Entrepreneurship in Research University Environments'. *The Journal of Higher Education, Vol. 60, No. 5 (Sep. - Oct., 1989), pp. 583-596.*
- Blackmore, P. and Blackwell, P. (2006)** 'Strategic Leadership in Academic Development'. *Studies in Higher Education Volume 31, Issue 3 June pp.373-387*
- Bleiklie, I. and Kogan, M. (2007)** 'Organization and Governance of Universities'. *Higher Education Policy, 2007, 20, pp. 477–493.*
- Blenker, P. et al (2006)** 'Entrepreneurship Education – the New Challenge Facing the Universities'. Department of Management. Aarhus School of Business Working Paper 2006-02. Aarhus: Aarhus School of Business.
- Bleiklie, I. and Kogan, M. (2007)** 'Organisation and Governance of Universities'. *Higher Education Policy. Volume 20 pp. 261-274*
- Bloom, G.M. (2006)** 'The Social Entrepreneurship Collaboratory (SE Lab): A University Incubator for a Rising Generation of Leading Social Entrepreneurs'. The Hauser Center for Non-profit Organizations and The John F. Kennedy School of Government Harvard University. Working Paper No. 31, Harvard 2006.
- Boucher, G. and Conway, C., Van Der Meer, E. (2003)** 'Tiers of Engagement by Universities in their Region's Development'. *Regional Studies, 37:9, pp. 887-897.*
- Bok, D. (2003)** 'Universities in the Market Place. The Commercialisation of Higher Education'. Princeton University Press, USA
- Bourdieu, P. (1999)** 'Social conditions of the international circulation of ideas'. In Shusterman, R. (edt) 'Bourdieu. A Critical Reader' Blackwell Publishers UK
pp 220-229
- Braun, G. and Diensberg, C. (2007)** 'Cultivating Entrepreneurial Regions' – Cases and Studies from the Network Project 'Baltic Entrepreneurship Partners'. *Rostock Contributions to Regional Science, Vol. 19. Rostock: Universität Rostock, Wirtschafts- und Sozialwissenschaftliche Fakultät.*
- Bridges, D. and Jonathan, R. (2003)** 'Education and the Market'. Chapter 7 in Blake, N., Smeyers, P. Smith, R. and Standish, P. (eds.) 'The Blackwell Guide to the Philosophy of Education' Blackwell Publishing Limited
- Bridgman, T. (2007)** 'Freedom and autonomy in the university enterprise'. *Journal of Organizational Change Management, Vol. 20 No. 4, 2007, pp. 478-490.*
- Browne, T. and Jenkins, M. (2008)** 'Achieving academic engagement? The landscape for educational technology support in two UK institutions'. *Proceedings ascilite Melbourne 2008: Concise paper: Browne & Jenkins.*
- Brush, C.G. et al (2003)** 'Doctoral Education in the Field of Entrepreneurship'. *Journal of Management 2003 29(3), pp. 309–331.*

- Bryman, A (2007)** 'Effective leadership in higher education: a literature review'.
Studies in Higher Education, Volume 32, Issue 6 December 2007 , pp. 693 - 710
- Casson, M. (1982)** 'The Entrepreneur. An Economic Theory'. Martin Robertson and Co. Ltd. Oxford
- Campbell, W.H. et al (2002)** 'Institutional and Faculty Roles and Responsibilities in the Emerging Environment of University-Wide Interdisciplinary Research Structures'. Report of the 2001-2002 Research and Graduate Affairs Committee. American Journal of Pharmaceutical Education, Vol. 66, Winter Supplement 2002.
- Carnoy, M. (1999)** 'Globalization and educational reform: what planners need to know'. Paris: UNESCO: International Institute for Educational Planning.
- CEL (2008)** 'Research on diversity and governance in the FE sector Recommendations and action plan'.
- CEL, (2007)** 'Leadership kills for governance'. 2008-9 programme and support guide.
CEL: <http://www.centreforexcellence.org.uk>
- CEL, (2006)** 'World-class leadership for global excellence'.
CEL: <http://www.centreforexcellence.org.uk>
- Chan, K.F. and Lau, T. (2005)** 'Assessing technology incubator programs in the science park the good, the bad and the ugly'. Technovation, 25 (2005), pp. 1215–1228.
- Chan, D. and Lo, W. (2007)** 'Running Universities as Enterprises: University Governance changes in Hong Kong'. Asia Pacific Journal of Education. Volume 27 Issue 305-322
- Chapple, W., Lockett, A., Siegel, D. and Wright, M. (2004) 'Assessing the Relative Performance of U.K. University Technology Transfer Offices: Parametric and Non-Parametric Evidence'. Department of Economics, Rensselaer Polytechnic Institute. Working Papers in Economics, No. 0423.
Source: <http://www.rpi.edu/dept/economics/www/workingpapers/>
- Charles, D.R. (2006)** 'Universities as key knowledge infrastructures in regional innovation systems'. Innovation 2006, 19(1), 117-130.
- Charles, D. (2003)** 'Universities and territorial development: reshaping the regional role of UK universities'. Local Economy 2003, 18(1), 7-20.
Charney, A. and Libecap, G.D., 'Impact of Entrepreneurial Education'. Insight. A Kauffman Research Series. Kansas: Kauffman, 09005500.
- Chen, S. (2007)** 'The Features and Trends of University Development in Australia and China'. Higher Education Policy Volume 20 pp. 223-242
- Cherwitz, A.R. (2005)** 'Creating a Culture of Intellectual Entrepreneurship'. Academe 91 Vol. 5
- Cherwitz, A.R. (2002)** 'Intellectual Entrepreneurship. A vision for graduate education'. Change, November/December.
- Council for Industry and Higher Education (CIHE) and the Society for Research into Higher Education (SRHI) (2008)** 'Leadership in the Age of Supercomplexity'. CIHE London
- Clark, B. R. (1998)** 'Creating Entrepreneurial Universities. Organisational pathways of transformation'. Pergamon IAU Press
- Clark, B.R. (2004)** 'Sustaining Change in Universities'. Society for Research into Higher Education, Open University Press
- Clark, B. R. (2004)** 'Delineating the Character of the Entrepreneurial University'. Higher Education Policy Volume 17 pp. 355-370
- Coaldrake, P. (2001)** 'Responding to Changing Student Expectations'. Higher Education Management. Vol. 13. No.2 pp75-93 OECD
- Coaldrake, P. and Stedman, L. (1999)** 'Academic Work in the Twenty-first Century. Changing roles and



- policies'. Higher Education Division, Department of Education, Training and Youth Affairs Occasional Paper Series. Australia, Higher Education Division, Department of Education, Training and Youth Affairs: 99H.
- Cook, T., Dwek, TR., Blumberg, B. and Hockaday, T. (2008)** "Commercialising University Research: Threats and Opportunities—The Oxford Model". *Capitalism and Society*. Volume 3, Issue 1 2008 Article 4.
- CVCP (1999)** 'Technology Transfer. The US Experience, Report of a Mission of UK Vice Chancellors'. Gatsby Trust London
- Commission of the European Communities (2005)** 'Mobilising the brainpower of Europe; Enabling universities to make their full contribution to the Lisbon Strategy'. Brussels
- Courtney, H., Kirkland, J. and Viguierie, P. (1999)** 'Strategy under Uncertainty'. Chapter 1 in Harvard Business Review on 'Managing Uncertainty' Harvard Business School Press
- Covin, J.G. and Slevin, D.P. (1991)** 'A conceptual model of entrepreneurship as firm behaviour'. *Entrepreneurship, Theory and Practice* 16 pp7-25
- Corbett, A. (2006)** 'Universities and the Europe of Knowledge: Ideas, Institutions and Policy Entrepreneurship in the European Union'. Higher Education Policy, 1955-2005. London: Palgrave Macmillan
- Crow, M. M. (2008)** 'Building an Entrepreneurial University' in 'the future of the Research University. Meeting the Challenges of the Global C21st University'. Paper to 2008 Kauffman-Planck Summit on Entrepreneurship Research and Policy held June 8-11, in Bavaria, Germany. Pp 31-41
- Cranmer, S. (2006)** 'Enhancing graduate employability: best intentions and mixed outcomes'. *Studies in Higher Education*, Volume 31 Issue 2 April pp. 169-184
- CUC, (2000)** 'Review of University Governance 1997-2000'. 'CUC: <http://www.shef.ac.uk/cuc/pubs.html>
- CUC, (1999)** 'Progress Report of the Working Party on the Effectiveness of University Governing Bodies'.
CUC: <http://www.shef.ac.uk/cuc/pubs.html>
- Cunningham, B.M. and Cochi-Ficano, C.K. (2000)** 'The Determinants of Donative Revenue Flows from Alumni of Higher Education: An Empirical Inquiry'. *The Journal of Human Resources*, Vol. 37, No. 3 (summer, 2002), pp. 540-569.
- Currie, J. (2002)** 'Australian Universities as Enterprise Universities: Transformed Players on a Global Stage'. In: *Globalisation: What Issues are at Stake for Universities?* Université Laval, Québec Canada, 20 September.
- Darling, A.L., England, M.D., Lang, D.W., Lopers-Sweetman, R (1989)** 'Autonomy and control: a university funding formula as an instrument of public policy'. *Higher Education* 18:pp 559-583, Kluwer Netherlands
- Daumard, P. (2001)** 'Enterprise Culture and University Culture'. *Higher Education Management* Vol 13.No. 2.pp. 67-75 OECD
- Davies, J.L. (2001)** 'The emergence of entrepreneurial cultures in European Universities'. *Higher Education Management* Vol 13.No. 2.pp. 25-45 OECD
- De Ziwa, D., (2005)** 'Using Entrepreneurial Activities as a Means of Survival: Investigating the Processes Used by Australian Universities to Diversify Their Revenue Streams'. *Higher Education*, Vol. 50, No. 3 (Oct., 2005), pp. 387-411.
- Dearing, R. (1997)** Report of the National Committee of Inquiry into Higher Education, *Higher Education in the Learning Society (The Dearing Report)*. July 1997
HMSO, Norwich UK
- Deem, R. (1998)** "New managerialism' and higher education: the management of performances and cultures in universities in the United Kingdom'. *International Studies in Sociology of Education*, 8:1, pp. 47-70.

- Deem, R. (2001)** 'Globalisation, New Managerialism, Academic Capitalism and Entrepreneurialism in Universities: is the local dimension important?' *Comparative Education* Volume 37 Issue 1 pp. 7-20
- Deem, R. (2007)** 'Managing Contemporary UK Universities- Manager-Academics and New Managerialism'. *Academic Leadership. Empirical Research* pp. 1-14 (www.academicleadership.org/empirical_research/Managing_Contemporary_UK)
- Deem, R., Ka Ho Mokb and Lucasa, L. (2008)** 'Transforming Higher Education in Whose Image? Exploring the Concept of the 'World-Class' University in Europe and Asia'. *Higher Education Policy*, 2008, 21, (83-97)
- Delanty, G., (2003)** 'Ideologies of the Knowledge Society and the Cultural Contradictions of Higher Education'. *Policy Futures in Education*, Vol. 1, No. 1.
- Delanty, G. (2001)** 'Challenging Knowledge. The University in the Knowledge Society'. Buckingham: SRHE and Open University Press Imprint.
- Dill, D.D. (1995)** 'University-Industry Entrepreneurship: The Organization and Management of American University Technology Transfer Units'. *Higher Education*, Vol. 29, No. 4 (Jun., 1995), pp. 369-384.
- Dooley, L. Kirk, D. (2007)** 'University-industry collaboration. Grafting the entrepreneurial paradigm onto academic structures'. *European Journal of Innovation Management*, Vol. 10 No. 3, 2007, pp. 316-332
- Douglass, J.A., (2008)** 'The Big Curve: Trends in University Fees and Financing in the EU and US'. CSHE Centre for Studies in Higher Education. Research & Occasional Paper Series: CSHE.19.08.
- Doutriaux, J and Barker, M. (1996)** 'University and Industry in Canada. A Changing Relationship'. *Industry and Higher Education*. Vol.10. No.1. April. pp 88-103
- Duberley, J., Cohen, L., Leeson, E., (2007)** 'Entrepreneurial Academics: Developing Scientific Careers in Changing University Settings'. *Higher Education Quarterly*, Vol. 61, No. 4, October 2007, pp. 479-497.
- Dulewicz V. (2000)** 'Emotional intelligence. The key to successful corporate leadership'. *Journal of General Management*, 25 pp 1-15
- Durham University Centre for Entrepreneurial Learning (2009)** 'A study of graduate aspirations to and understanding of entrepreneurial behaviour'. Durham UK
- Edwards, L. (2001)** 'Are E-Clubs the answer to entrepreneurial learning?' WEI working Paper Series No.17
- Epitropaki, O. (2001)** 'What is Transformational Leadership?' Institute of Work Psychology. Sheffield England
- ESECT (2005)** 'Enhancing Student Employability'. Higher Education Academy. Learning and Employability Series
- Etzkowitz, H. and Leydesdorff, L. (2000)** 'The dynamics of innovation: from National System and "Mode 2" to a Triple Helix of university-industry-government-relations'. *Research Policy* 29 (2000), pp. 109-123.
- Etzkowitz, H. (2003)** 'Research groups as 'quasi-firms': the invention of the entrepreneurial university'. *Research Policy* 32, pp. 109-121.
- Etzkowitz, H., (2004)** 'The evolution of the entrepreneurial university'. *Int. J. Technology and Globalisation*, Vol. 1, No.1, pp. 64-77.
- Etzkowitz, H. (2008)** 'The Triple Helix. University- Industry- Government, Innovation in Action'. Routledge. London
- European Commission (1998)** 'Promoting Entrepreneurship and Competitiveness'. Brussels September COM (1998)
- European Commission (2005)** 'The Competitiveness challenge'. Enterprise Europe, Jan- March
- EU, Directorate-General for Enterprise, (2004)** 'Helping to create an entrepreneurial culture. A guide on good practices in promoting entrepreneurial attitudes and skills through education'. Directorate-General for Enterprise and Industry. Brussels: EU, Unit B.1: Entrepreneurship (SC27 3/4).
- EU (2006)** 'Entrepreneurship Education in Europe. Fostering Entrepreneurial Mindsets through Education and Learning'. Final Proceedings of the Oslo Conference 27-27 October, European Commission.
- EU, Commission of the European Communities, (2006)** 'Implementing the Community Lisbon Programme:



- Fostering entrepreneurial mindsets through education and learning'. Brussels: EU, COM (2006) 33 final.
- EU, Commission of the European Communities, (2008)** 'Towards more knowledge-based policy and practice in education and training'. Brussels: EU, SEC (2007) 1098.
- EU, Commission of the European Communities, (2008)** 'Entrepreneurship in higher education, especially within non-business studies'. Final Report of the Expert Group. Directorate-General for Enterprise and Industry. Brussels: EU, Unit B.1: Entrepreneurship.
- Finlay, I. (2004)** 'Living in an 'Entrepreneurial University'. Research in Post Compulsory Education'. Volume 9 Issue 3. pp. 417-434
- Franklin, S.J., Wright, M., Lockett, A., (2001)** 'Academic and Surrogate Entrepreneurs in University Spin-out Companies'. Journal of Technology Transfer, 26, 127] 141, 2001.
- Frooman, J. (1999)** 'Stakeholder Influence Strategies'. The Academy of Management Review, Vol. 24, No. 2 (Apr., 1999), pp. 191-205.
- Geiger, R. L. (2004)** 'Knowledge and Money: Research Universities and the Paradox of the Market Place'. Stanford University Press US
- Geiger, R.L. (2006)** 'The Quest for Economic Relevance by US Research Universities'. Higher Education Policy. Volume 19 pp. 411-431
- Geuna, A., Muscio, A. (2008)** 'The Governance of University Knowledge Transfer'. SPRU Electronic Working Paper Series. Paper No. 173, September 2008.
- Gibb, A.A. and Scott, M. (1985)** 'Strategic Awareness, Personal Commitment and the Process and Planning in the Small Business'. Journal of Management Studies. Vol.22. No.6. November
- Gibb, A.A. (2007)** 'Entrepreneurship: Unique Solutions for Unique Environments. Is it possible to achieve this with the Existing Paradigm?' International Journal of Entrepreneurship Education 5: 93-142. Senate Hall Academic Publishing.
- Gibb, A.A. and Hannon, P. (2006)** 'Towards the Entrepreneurial University?' International Journal of Entrepreneurship Education Volume 4 pp. 73 110
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., and Trow, M. (1994)** 'The New Production of Knowledge'. Sage Publications, London
- Gilbert, A.D., (2000)** 'The Idea of a University beyond 2000'. Policy, Autumn 2000, pp. 31-36.
- Goffee, R. and Jones, G. (2007)** 'Leading Clever People'. Harvard Business Review, Reprint R0703D
- Graham, G. (2002)** 'Universities. The Recovery of an Idea'. Imprint Academic UK
- Green, M. and Baer, M. (2000)** 'What does globalisation mean for teaching and learning?' CHET Transformation Debates July 21
- Green, F. J. and Saridakis, G. (2008)** 'The role of higher education skills and support in graduate self-employment'. Studies in Higher Education, Volume 33, Issue 6 pp. 653 - 672
- Greenaway, D., and Haynes, M. (2003)** 'Funding Higher Education in the UK: the role of fees and loans'. The Economic Journal 113 F150 –F166 Blackwell Publishing UK
- Greenhalgh, R. (2008)** 'Perspectives on Management and Leadership from HE and Industry' pp. 17-21 in 'Leadership in an Age of Supercomplexity'. Edited by Keith Herrmann. CIHE and SRHE
- Guerrero- Cano, M. (2008)** 'The Creation and Development of Entrepreneurial Universities in Spain. An Institutional Approach'. Doctoral Thesis Universitat Autònoma Barcelona Spain.
- Gupta, V., MacMillan, I.C., and Surie, G. (2004)** 'Entrepreneurial leadership; developing and measuring a cross- cultural construct'. Journal of Business Venturing, Volume 19 pp. 241-260
- Habermas, J. and Blazek, J.R. (1987)** 'The Idea of the University: Learning Processes'. New German

- Critique, No. 41, Special Issue on the Critiques of the Enlightenment (Spring - Summer, 1987), pp. 3-22
- Hager, P. and Hyland, T. (2003)** 'Vocational Education and Training'. Chapter 15 in Blake, N., Smeyers, P. Smith, R. and Standish, P. (eds.) 'The Blackwell Guide to the Philosophy of Education' Blackwell Publishing Limited
- Haggis, T. (2006)** 'Pedagogies for diversity: retaining critical challenges amidst fears of dumbing down'. Studies in Higher Education. Volume 31, Issue 5. October. Pp 521-535
- Hayrinen-Alestalo, M. (1999)** 'The University under the Pressure of Innovation Policy – Reflecting on European and Finnish Experiences'. Science Studies, Vol. 12, No. 1, pp. 44-69.
- Hearn, J.C. (2003)** 'Diversifying Campus Revenue Streams. Opportunities and Risks'. American Council of Education, Center for Policy Analysis; USA
- Henkel, M. (2004)** 'Current Science Policies and their Implications for the Formation and Maintenance of Academic Identity'. Higher Education Policy. Volume 17 pp 167-182
- Herrmann, K. ed. (2008)** 'Leadership in an Age of Supercomplexity'. Council for Industry in Higher Education. UK
- Higher Education in Europe (2004)** 'Entrepreneurship in Europe'. Vol. XXIX no. 2 Carfax Publishing
- Hughes, A. (2003)** 'Knowledge Transfer, Entrepreneurship and Economic Growth'. ESRC Centre for Business Research Working Paper 273, University of Cambridge, Small Business and Entrepreneurship
- Huisman, J. (2008)** 'World-Class Universities'. Higher Education Policy, Volume 21, (1-4) International Association of Universities 0952-8733/08 \$30.00
www.palgrave-journals.com/hep
- IHEP, (2007)** 'Regional Universities and Civil Society Development. A Symposium and Study Tour'. Washington: IHEP
- IHEP, (2009)** 'Privatization in Higher Education: Cross-Country Analysis of Trends, Policies, Problems and Solutions'. Issue Brief. Washington: IHEP.
- International Association of Universities (2005)** 'Key results: 2005 IAU Global Survey on Internationalisation of Higher Education'. www.unesco.org
- Jack, S.L. and Anderson, A.R., (1999)** 'Entrepreneurship education within the enterprise culture'. International Journal of Entrepreneurial Behaviour & Research, Vol. 5 No. 3, 1999, pp. 110-125.
- Jacob, M., Lundqvist, M., Hellsmark, H., (2003)** 'Entrepreneurial transformations in the Swedish University system: the case of Chalmers University of Technology'. Research Policy 32 (2003), pp. 1555–1568.
- Johnson, R.N., Deem, R., (2003)** 'Talking of students: Tensions and contradictions for the manager-academic and the university in contemporary higher education'. Higher Education 46: pp. 289–314
- Ka Ho Mok, (2005)** 'Fostering entrepreneurship: Changing role of government and higher education governance in Hong Kong'. Research Policy 34 (2005), pp. 537–554.
- Kauffman Foundation (2008)** 'The Future of the Research University. Meeting the Global Challenges of the 21st Century'. Conference papers from the Kauffman - Max Planck Annual Summit Rethinking the Role of the University and Public Research for the Entrepreneurial Age' June 8-11 Bavaria Germany
- Keast, D.A., (1995)** 'Entrepreneurship in Universities: Definitions, Practices, and Implications'. Higher Education Quarterly, Vol. 49, No. 3, July 1995, pp. 248-266.
- Kelly, G., Mulgan, G. Muers, S. (2007)** 'Creating Public Value. An analytical framework for public service reform'. Strategy Unit, Cabinet office, UK Government (www.strategy.gov.uk)
- Kilgour, F.G. (1992)** 'Entrepreneurial Leadership'. Library Trends, Vol. 40, No. 3, Winter 1992, pp. 457-74.
- Kinchin, I.M., Lygo- Baker, S. and Hay, D. B. (2008)** 'Universities as centres of non-learning'. Studies in Higher Education, Volume 33, Issue 1 February pp. 89 - 103.



- Kirp, D.L. (2003)** 'Shakespeare, Einstein and the Bottom Line: The Marketing of Higher Education'. Harvard University Press
- Kirby, D. (2006)** 'Creating Entrepreneurial Universities in the UK. Applying Entrepreneurship Theory in Practice'. *Journal of Technology Transfer* Volume 31 pp. 599-603
- Klofsten, M., (2000)** 'Training Entrepreneurship at Universities: a Swedish Case'. *Journal of European Industrial Training* 24/6, pp. 337-344.
- Kneale, P., (2005)** 'Imaginative Curriculum Guide. Enterprise in the Higher Education Curriculum'. Higher Education Academy, UK
- Knight, J. (2003)** 'Internationalization of Higher Education Practices and Priorities'. 2003 IAU Survey Report. IAU: <http://www.unesco.org/iau>
- Kohler, J. and Huber, J. eds. (2006)** 'Higher education governance between democratic culture, academic aspirations and market forces'. Council of Europe Publishing, Strasbourg
- Kolsaker, A. (2008)** 'Academic professionalism in the managerialist era: a study of English universities'. *Studies in Higher Education*, Volume 33, Issue 5 October 2008, pages 513 - 525
- Kristensen, B. (1999)** 'The Entrepreneurial University as a Learning University'. *Higher Education in Europe*. Volume 24. Issue 1 pp. 35-46
- Kuratko D. F. and Hornsby J.S. (1999)** 'Corporate Entrepreneurial Leadership for the 21st Century'. *Journal of Leadership and Organisational Studies*. Volume 5 No. 2 pp.27-39
- Kwiek, M. (2001)** 'Globalization and Higher Education'. *Higher Education in Europe*, Volume XXVI, No. 1
- Kwiek, M. (2000)** 'The Nation-State, Globalization and the Modern Institution of the University'. *Theoria. A Journal of Social and Political Theory*, No. 96, December 2000, pp. 74-99.
- Kwiek, M. (2005)** 'Academic Entrepreneurship and private higher education in Europe (in a comparative perspective). Center for Public Policy. Poznan University, Ul. Szamarzewskiego 89, 60-569 Poznan, Poland. kwiekm@amu.edu.pl, www.cpp.amu.edu.pl
- Kwiek, M. (2005)** 'The University and the State in a Global Age: renegotiating the traditional social contract?' *European Educational Research Journal*, Vol. 4, No. 4, 2005, pp. 324-341.
- Kwiek, M. (2008)** 'Academic Entrepreneurship vs. Changing Governance and Institutional Management Structures at European Universities'. *Policy Futures in Education*, 6(6), pp. 757-770
- Lambert, R. (2003)** 'Lambert Review of Business-Industry Collaboration'. HMSO Norwich UK
- Lawrence, P.R. and Lorsch, J.W. (1986)** 'Organisation and Environment: Managing Differentiation and Integration'. Harvard Business School Classics
- Lazzeroni, M. and Piccaluga, A. (2003)** 'Towards the Entrepreneurial University'. *Local Economy*, 18:1, pp. 38-48.
- Lee, Y.S. (1996)** 'Technology transfer' and the research university: a search for the boundaries of university-industry collaboration. *Research Policy* 25 (1996), pp. 843-863.
- Lehrera, M., Nell, P. and Gärber, L. (2009)** 'A national systems view of university entrepreneurialism: Inferences from comparison of the German and US experience'. *Research Policy* 38 (2009), pp. 268–280.
- Leisner, A., (2006)** 'Education or Service? Remarks on teaching and learning in the entrepreneurial university'. *Educational Philosophy and Theory*, Vol. 38, No. 4.
- Leitch, S. (2006)** 'Prosperity for all in the Global Economy- World Class Skills'. HMSO Norwich UK
- Leslie, L.L. and Ramey, G., (1998)** 'Donor Behaviour and Voluntary Support for Higher Education Institutions'. *The Journal of Higher Education*, Vol. 59, No. 2 (Mar. - Apr., 1988), pp. 115-132.
- Leydesdorff, L. and Etzkowitz, H. (2003)** 'The Triple Helix as a Model for Innovation Studies'. (Conference

Report), *Science & Public Policy* Vol. 25(3) (1998), pp. 195-203.

Leydesdorff, L. and Meyer, M. (2003) 'The Triple Helix of university-industry-government relations'. *Scientometrics*, Vol. 58, No. 2 (2003) 191-203.

Li-Chuan Chiang, (2004) 'The Relationship between University Autonomy and Funding in England and Taiwan'. *Higher Education*, Vol. 48, No. 2 (Sep., 2004), pp. 189-212.

Link, A.N., (2006) 'An Empirical Analysis of the Propensity of Academics to Engage in Informal University Technology Transfer'. Department of Economics, Rensselaer Polytechnic Institute Working Papers in Economics, No. 0610 Source Phan, P.H. , Siegel, D.S. 2006 ' The Effectiveness of University Technology Transfer. *Foundations and Trends in Entrepreneurship*', Vol. 2, No.2 (2006), pp 77-144. <http://www.rpi.edu/dept/economics/www/workingpapers/>

Lombardi, J.V. (2002) 'University Organization, Governance, and Competitiveness'. An Annual Report from The Lombardi Program on Measuring University Performance. The Top American Research Universities. US

Ma, R. (2000) 'Enterprise Education and its Relationship to Enterprising Behaviours. A methodological and Conceptual investigation'. PhD Thesis Durham University UK

Maak, T. (2007) 'Responsible Leadership, Stakeholder Engagement, and the Emergence of Social Capital'. *Journal of Business Ethics* (2007) 74:329–343.

Maskell, D. and Robinson, I. (2001) 'The New Idea of a University'. Imprint Academic, Thorverton, UK

Mawditt, R. (1998) 'Lest we forget'. *Higher Education Policy*, Volume 11 pp. 323-330

Maunter, G. (2005) 'The Entrepreneurial University. A discursive profile of a higher education profile'. *Critical Discourse Studies*. Volume 2 Issue 2 pp. 95-120

Mcinnis, C. (2001) 'Promoting academic expertise and authority in an entrepreneurial culture', *Higher Education Management* Vol 13 No. 2 pp 45-57. OECD

Mendes, T, Estabrook, L, Magelli, P., and Conlin, K. (2006) 'How academics really view entrepreneurship and entrepreneurial behavior: A study of 2,000 faculty, 10,000 graduate students and 100 Academic administrators at the University of Illinois at Urbana-Champaign'. University of Illinois USA

Mendoza, P. and Berger, J.B. (2005) 'Patenting Productivity and Intellectual Property Policies at Research I Universities: An Exploratory Comparative Study'. *Education Policy Analysis Archives*, Vol. 13 No. 4.

Meyer, L. H. and Evans I.M. (2007) 'Supporting academic staff: Meeting new expectations in higher education without compromising traditional faculty values'. *Higher Education Policy* Volume 20 pp. 121-144

Miclea, M. (2004) "Learning to do" as a pillar of education and its links to entrepreneurial studies in higher education: European contexts and approaches'. *Higher Education in Europe*, Volume 29, Issue 2 July 2004, pages 221 - 231

Miller, M.T. and Katz, M. (2004) 'Effective Shared Governance: Academic Governance as a Win-Win Proposition'. The NEA 2004 Almanac of Higher Education. Washington: NEA.

Minshall, T. and Wicksteed, B. (2005) 'University spin-out companies: Starting to fill the evidence gap'. A report on a pilot research project commissioned by the Gatsby Charitable Foundation., St. John's Innovation Centre Ltd.

Mittelstädt, A. and F. Cerri, (2008) 'Fostering Entrepreneurship for Innovation'. OECD Science, Technology and Industry Working Papers, 2008/5. OECD publishing, 10.1787/227624785873.

Mohrman, K., et al, (2008) 'The Research University in Transition: The Emerging Global Model'. *Higher Education Policy*, 2008, 21, pp. 5–27.

Moore, M. H.. (1995) 'Creating Public Value: Strategic Management in Government'. Harvard University Press



- Mora, J-G and Vieira, M-J (2009)** 'Governance, organisation change and Entrepreneurialism: is there a connection'. pp 74-100 in Shattock, M. (edt.) 'Entrepreneurialism in the Universities and the Knowledge Economy'. Open University Press
- Moreland, N. (2007)** 'Entrepreneurship and higher education: an employability perspective'. The Higher Education Academy, UK
- Moses, I. (2005)** 'Institutional Autonomy Revisited: Autonomy Justified and Accounted'. Higher Education Policy Volume 19 pp. 411-431
- National Academy of Science USA (2005)** 'Facilitating Interdisciplinary Research'. National Academies Press Washington USA
- Namen, J. L. and Slaven, D. P. (1993)** 'Entrepreneurship and the Concept of Fit: A Model and Empirical Tests'. Strategic Management Journal. Vol. 14 pp137-153
- Navarro, J.R. and Gallardo, F.O. (2003)** 'A Model of Strategic Change: Universities and Dynamic Capabilities'. Higher Education Policy Volume 16 pp. 199-212
- Neave, G., (1998)** 'Growing Pains: The Dearing Report from a European Perspective'. Higher Education Quarterly, 0951-5224, Vol. 52, No. 1, January 1998, pp. 118-136.
- Nicolaou, N. and Birley, S. (2003)** 'Social Networks in Organizational Emergence: The University Spinout Phenomenon'. Management Science, Vol. 49, No. 12, December 2003, pp. 1702-1725.
- NIRAS Consultants, (2008)** 'Survey of Entrepreneurship in Higher Education in Europe'. FORA, ECON Pöyry
- Noir sur Blanc (1999)** 'Survey. Internationalisation of Universities. Development Strategies'. Noir sur Blanc. Paris
- Nowotny, H., Scott, P. and Gibbons, M. (2001)** 'Rethinking Science Knowledge and the Public Age of Uncertainty'. Polity Press, USA 11.
- Nowotny, H., Scott, P., Gibbons, M. (2003)** 'Mode 2' Revisited: The New Production of Knowledge'. Minerva 41: pp. 179-194,
- OECD, (2001)** 'Journal of the Programme on Institutional Management in Higher Education'. Higher Education Management. Special Issue: Education and Skills. Volume 13, No. 2. Paris: OECD Publishing
- OECD, (2003)** 'Changing Patterns of Governance in Higher Education'. In: Education Policy Analysis. Pg. 59-78.
- OECD (2004)** 'The Internationalisation of Higher Education'. Policy Brief August OECD Publishing
- OECD, (2005)** 'Higher Education Management and Policy'. Special Issue: Entrepreneurship. Volume 17, No. 3. Paris: OECD Publishing. In particular 'Entrepreneurial Universities and the Development of Regional Societies: A Spatial View of the Europe of Knowledge' pp. 59-86 '
- OECD (2007)** 'Entrepreneurship'. Special Issue of Journal of Education Management and Policy Volume 17, No. 3 – Special Issue. Journal of the Programme on Institutional Management in Higher Education. OECD Publishing
- O'Shea, R.P., et al, (2007)** 'Delineating the anatomy of an entrepreneurial university: the Massachusetts Institute of Technology experience'. R&D Management 37, 1, 2007.
- Olssen, M. and Peters, M.A. (2005)** 'Neoliberalism, higher education and the knowledge economy: from the free market to knowledge capitalism'. Journal of Education Policy. Volume 20 Issue 3 PP 313-345
- Owen-Smith, J., et al., (2002)** 'A Comparison of U.S. and European University-Industry Relations in the Life Sciences'. Management Science, Vol. 48, No. 1, January 2002 pp. 24-43.
- Pan, Su-Yan (2007)** 'Intertwining of Academia and Officialdom and University Autonomy: Experience from Tsinghua University in China'. Higher Education Policy Volume 20 pp.207-216
- Papayannakis, L., Kastelli, I., Damigos, D. and Mavrotas, G. (2008)** 'Fostering Entrepreneurship Education in

Engineering Curricula in Greece. Experiences and challenges for a Technical University'. *European Journal of Engineering Education*. Volume 33 Issue 2 May pp 199-210

Peters, M.A. (2003) 'Classical Political Economy and the Role of Universities in the New Knowledge Economy'. *Globalisation, Societies and Education*. Volume 1 Issue 2 pp153-168

Pilbeam, C., (2008) 'Designing an Entrepreneurial University in an Institutional Setting'. *Higher Education Policy*, 2008, 21, pp. 393–404.

Pirnay, F. et al. (2003) 'Toward a Typology of University Spin-offs'. *Small Business Economics* 21: pp. 355–369, 2003

Poh-Kam Wong, Yuen-Ping Ho and Singh, A. (2007) 'Towards an "Entrepreneurial University" Model to Support Knowledge-Based Economic Development: The Case of the National University of Singapore'. *World Development*, Vol. 35, No. 6, pp. 941–958.

Politis, D. (2005) 'The Process of Entrepreneurial Learning: A Conceptual Framework'. *Entrepreneurship in Theory and Practice*, July 2005, pp. 399-424.

Poon Teng Fatt, J., Hee Ang, T. (1995) 'Enhancing Entrepreneurial Spirit: A Resolve for University Graduates'. *Management Research News*, Vol. 18 Number 1/2 1995, pp. 31-52.

Pratt, J. (2001) 'Changing patterns of diversity in Europe. Lessons from an OECD study tour'. *Higher Education Management* Vol 13 No.2 pp 93-105

Prabhu, G.M. (1999) 'Social entrepreneurial leadership'. *Career Development International*. Volume 4/3 pp140-145 MCB University Press

Rae, D. and Carswell, M. (2000) 'Towards a conceptual understanding of entrepreneurial learning'. *Journal of Small Business and Enterprise Development*, Vol. 8, No. 2.

Rajan A., van Eupen P. and Jaspers A. (1997) 'Britain's flexible labour market. What next?' RS50, DfEE and CREATE, Tunbridge Wells

Ravasi, D. and Turati, C. (2005) 'Exploring entrepreneurial learning: a comparative study of technology development projects'. *Journal of Business Venturing*, 20 (2005), pp. 137–164.

Rinne, R. and Koivula, J. (2009) 'The dilemmas of the changing university'. Chapter 10 in Shattock, op.cit

Rolfe, H. (2001) 'University strategy in an age of uncertainty: the effect of higher education funding on old and new universities'. National Institute for Economic and Social Research Discussion paper 191 December

Roman, S., Cuestas, P.J. and Fenollar, P. (2008) 'An examination of the interrelationships between self-esteem, others' expectations, family support, learning approaches and academic achievement'. *Studies in Higher Education*, Volume 33, Issue 2 April, pp. 127 - 138

Roos, G, Fernstrom, F. and Gupta, O. (2005) 'National Innovation Systems: Finland, Sweden and Australia Compared. Learnings for Australia'. Report for the Australian Business Foundation. Intellectual Capital Service Ltd. 46 Gray's Inn Road, London. WC1X8LR. Email: intcap@intcap.com

Ropke, J. (1998) 'The Entrepreneurial University. Innovation, academic knowledge creation and regional development in a globalized economy'. Department of Economics, Philipps-Universität Marburg, Germany. (E-mail: roepke@wiwi.uni-marburg.de)

Sa, C.M. (2008) 'Interdisciplinary strategies in U.S. research universities'. *Higher Education* (2008) Volume 55:pp. 537–552. Published online: 8 June 2007. Springer Science+Business Media B.V. 2007

Sainsbury (Lord) of Turville, (2007) 'The Race to the Top. A Review of Government's Science and Innovation Policies'. Norwich: Her Majesty's Stationery Office.

Scase, R. (2007) 'Global Remix. The Fight for Competitive Advantage'. Kogan Page

Schein, E.H. (1992) 'Organisational Culture and Leadership'. Jossey Bass Publishers, San Francisco, CA, 1992



- Schonfield, A. (2009)** 'What is an Effective and High Performing Governing Body in UK Higher Education?' LFHE: <http://www.lfhe.ac.uk/publications/>
- Schuetze, H.G. (2007)** 'Research Universities and the Spectre of Academic Capitalism'. *Minerva* (2007) 45: pp. 435–443.
- Schumpeter, J.A. (1934)** 'Theory of Economic Development'. Cambridge Mass. Harvard University Press
- Segal, Quince, Wicksteed (1985)** 'The Cambridge Phenomena'. Enterprise House, Histon, Cambridge, UK
- Senges M, (2007)** 'Knowledge Entrepreneurship in Universities. Practice and Strategy in the case of Internet Based Innovation Appropriation'. Doctoral Thesis. Universitat Oberta de Catalunya Barcelona Spain
- Shane, S. and Stuart, T. (2002)** 'Organizational Endowments and the Performance of University Start-Ups'. *Management Science*, Vol. 48, No. 1, Special Issue on University Entrepreneurship and Technology Transfer (Jan., 2002), pp. 154-170.
- Shane, S. (2004)** 'Encouraging university entrepreneurship? The effect of the Bayh-Dole Act on university patenting in the United States'. *Journal of Business Venturing*, 19 (2004), pp. 127–151.
- Shattock, M. (2000)** 'Strategic Management in European Universities in an Age of Increasing Institutional Self Reliance'. *Tertiary Education and Management* 6: 93–104, 2000.
- Shattock, M. ed. (2009)** 'Entrepreneurialism in Universities and the Knowledge Economy. Diversification and Organisational Change in European Higher Education'. Society for Research in Higher Education and the Open University Press. UK
- Shinn, T. (2002)** 'The Triple Helix and New Production of Knowledge: Prepackaged Thinking on Science and Technology'. *Social Studies of Science*, 2002; 32; 599.
- Slaughter, S and Leslie, L.L. (1997)** 'Academic Capitalism. Politics, Policies and the Entrepreneurial University'. John Hopkins University Press. London
- Smith, D. (1999)** 'The Changing Idea of a University'. ch. 8 in Smith and Langslow (eds) 'The Idea of a University' Higher Education Policy Series 51 Jessica Kingsley Publishers London and Philadelphia
- Smith, H.L (2007)** 'Universities, innovation, and territorial development: a review of the evidence'. *Environment and Planning C: Government and Policy* 2007, volume 25, pp. 98-114.
- Sporn, B. (1996)** 'Managing University Culture: An Analysis of the Relationship between Institutional Culture and Management Approaches'. *Higher Education*, Vol. 32, No. 1 (Jul., 1996), pp. 41-61.
- Tadmor, Z. (2004)** 'The Triad Research University or a post 20th Century Research University Model'. *International Journal of Educational Advancement* Volume 17 No.2 pp. 167-182
- Thomas, E. (2004)** 'Increasing Voluntary giving to Higher Education'. Task Force Report to Government' UK Department for Education and Skills.
- Thorn, K. and Soo, M. (2006)** 'Latin American Universities and the Third Mission. Trends, Challenges and Policy Options'. World Bank Policy Research Working Paper 4002, August
- Toakley, A.R. (2004)** 'Globalisation, Sustainable Development and Universities'. *Higher Education Policy* Volume 17 pp.311-324.
- Todorovic, W.Z., et al., (2005)** 'Making university departments more entrepreneurial. The perspective from within'. *Entrepreneurship and Innovation*, May 2005, pp. 115-122.
- UNESCO, (2003)** 'Internationalisation of Higher Education: Trends and Developments since 1998'. Meeting of Higher Education Partners, Background paper prepared by The International Association of Universities. Paris: UNESCO.
- UNESCO, (2004)** 'Higher Education in a Globalized Society'. UNESCO Education Position Paper. Paris: UNESCO.
- UNESCO, (2007)** 'Main transformations, challenges and emerging patterns in Higher Education

- Systems'. UNESCO Forum on Higher Education, Research and Knowledge Occasional Paper Series Paper no. 16. Paris: UNESCO.
- Universities UK (2007)** 'Spending Review 2007, Securing the Future'. Policy Briefing Note
- U.S. Department of Education. (2006) 'A test of leadership. Charting the Future of U.S. Higher Education'. A Report of the Commission Appointed by Secretary of Education Margaret Spellings. Washington, D.C., Online: www.ed.gov/about/bdscomm/list/hiedfuture/index.html.
- Vaira, M. (2004)** 'Globalization and higher education organizational change: A framework for analysis'. Higher Education 48: pp. 483–510.
- van Vught, F. (2008)** 'Mission Diversity and Reputation in Higher Education'. Higher Education Policy, 2008, 21, (151–174). International Association of Universities 0952-8733/08 www.palgrave-journals.com/hep
- Vecchio, R.P. (2003)** 'Entrepreneurship and leadership: common trends and common threads'. Human Resource Management Review, 13 (2003), pp. 303–327.
- Viale, R., Etkowitz, H. (2005)** 'Third academic revolution: Polyvalent knowledge; the "DNA" of the Triple Helix'. Available online: http://www.sea.unisannio.it/didattica/appunti_dispense/A_A_06_07/Vespasiano/Gruppo%20A/THIRD%20ACADEMIC%20REVOLUTION.pdf Accessed 07 May 2009.
- Volkman, C. (2004)** 'Entrepreneurial studies in higher education'. Higher Education in Europe, Volume 29, Issue 2 July 2004, pages 177 – 185.
- Wasser, H. (1990)** 'Changes in the European University: from traditional to Entrepreneurial'. Higher Education Quarterly Volume 44 Issue 2 PP 110-122.
- Watson, D. (2008)** 'Businesses or Business-like? Some thoughts on cultural convergence'. Pp 25-28 in Herrmann op cit
- Weerts, D.J. (2007)** 'Toward an Engagement Model of Institutional Advancement at Public Colleges and Universities'. International Journal of Educational Advancement'. Vol. 7, No. 2.
- Wenger, E. (1998)** 'Communities of Practice: Learning, meaning and identity'. Cambridge University Press
- Westwood, A. (2000)** 'Winners and Losers in the World of Work'. Employment Policy Institute and Academy of Enterprise. London. pp 64.
- Williams, G (2009)** 'Finance and entrepreneurial activity in higher education in the knowledge society'. Chapter 2 pp. 9-33 in Shattock, M. (edt.) 'Entrepreneurialism in Universities and the Knowledge Economy' pp. Open University Press. McGraw-Hill Education
- Williams, G. and Kitae, I. (2005)** 'Overview of National Policy Contexts for Entrepreneurialism in Higher Education Institutions' Higher Education Management and Policy'. Volume 17 No.3 pp. 125-141.
- Williamson, T., Read, E., and Sarmiento, T. (2009)** 'Enterprise Societies – Are they necessary?' Article provided by Mr. Williamson.
- Wissema J.G. (2008)** 'Towards the Third Generation University: Managing the University in Transition'. Edward Elgar
- Ylinenpää, H., (2001)** 'Science Parks, Clusters and Regional Development'. Luleå University of Technology; Department of Business Administration and Social Sciences, Division of Industrial Organization & Small Business Academy. Luleå University of Technology: AR 2001:48. Paper presented at 31st European Small Business Seminar in Dublin, Sept 12-14.
- Zhou, Ch., (2008)** 'Emergence of the entrepreneurial university in evolution of the triple helix'. Journal of Technology Management in China, Vol. 3 No. 1, 2008, pp. 109-126.
- Zumeta, W. (2007)** 'Financing Higher Education Access in Challenging Times'. The NEA 2007 Almanac of Higher Education. Washington: NEA.





Saïd Business School
UNIVERSITY OF OXFORD