

Innovation, Technology, and Knowledge Management

Series Editor

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Editors

Universities in Change

Managing Higher Education Institutions
in the Age of Globalization

 Springer

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ISBN 978-1-4614-4589-0 ISBN 978-1-4614-4590-6 (eBook)
DOI 10.1007/978-1-4614-4590-6
Springer New York Heidelberg Dordrecht London

Library of Congress Control Number: 2012946186

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Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Series Foreword

The Springer book series *Innovation, Technology, and Knowledge Management* was launched in March 2008 as a forum and intellectual, scholarly “podium” for global/local, transdisciplinary, transsectoral, public–private, and leading/“bleeding” -edge ideas, theories, and perspectives on these topics.

The book series is accompanied by the Springer *Journal of the Knowledge Economy*, which was launched in 2009 with the same editorial leadership.

The series showcases provocative views that diverge from the current “conventional wisdom,” that are properly grounded in theory and practice, and that consider the concepts of *robust competitiveness*,¹ *sustainable entrepreneurship*,² and *democratic capitalism*,³ central to its philosophy and objectives. More specifically, the aim of this series is to highlight emerging research and practice at the dynamic intersection of these fields, where individuals, organizations, industries, regions, and nations are harnessing creativity and invention to achieve and sustain growth.

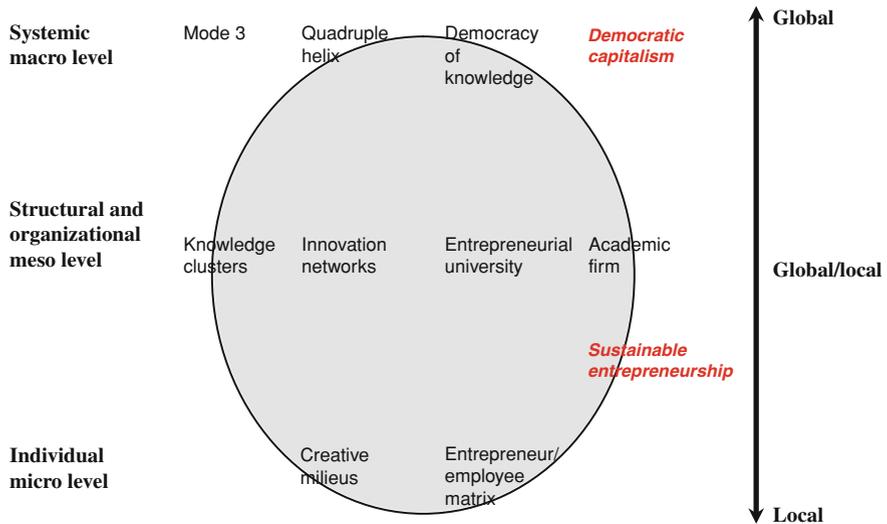
¹ We define *sustainable entrepreneurship* as the creation of viable, profitable, and scalable firms. Such firms engender the formation of self-replicating and mutually enhancing innovation networks and knowledge clusters (innovation ecosystems), leading toward robust competitiveness (Carayannis 2009).

² We understand *robust competitiveness* to be a state of economic being and becoming that avails systematic and defensible “unfair advantages” to the entities that are part of the economy. Such competitiveness is built on mutually complementary and reinforcing low-, medium-, and high-technology and public and private sector entities (government agencies, private firms, universities, and nongovernmental organizations) (Carayannis 2009).

³ The concepts of *robust competitiveness* and *sustainable entrepreneurship* are pillars of a regime that we call “*democratic capitalism*” (as opposed to “popular or casino capitalism”), in which real opportunities for education and economic prosperity are available to all, especially—but not only—younger people. These are the direct derivative of a collection of top-down policies as well as bottom-up initiatives (including strong research and development policies and funding, but going beyond these to include the development of innovation networks and knowledge clusters across regions and sectors) (Carayannis and Kaloudis 2009).

Books that are part of the series explore the impact of innovation at the “macro” (economies, markets), “meso” (industries, firms), and “micro” levels (teams, individuals), drawing from such related disciplines as finance, organizational psychology, research and development, science policy, information systems, and strategy, with the underlying theme that for innovation to be useful it must involve the sharing and application of knowledge.

Some of the key anchoring concepts of the series are outlined in the figure below and the definitions that follow (all definitions are from Carayannis and Campbell 2009).



Conceptual profile of the series *Innovation, Technology, and Knowledge Management*

- The “Mode 3” Systems Approach for Knowledge Creation, Diffusion, and Use: “Mode 3” is a multilateral, multinodal, multimodal, and multilevel systems approach to the conceptualization, design, and management of real and virtual, “knowledge-stock” and “knowledge-flow,” modalities that catalyze, accelerate, and support the creation, diffusion, sharing, absorption, and use of cospecialized knowledge assets. “Mode 3” is based on a system-theoretic perspective of socioeconomic, political, technological, and cultural trends and conditions that shape the coevolution of knowledge with the “knowledge-based and knowledge-driven, global/local economy and society.”
- Quadruple Helix: Quadruple helix, in this context, means to add to the triple helix of government, university, and industry a “fourth helix” that we identify as the “media-based and culture-based public.” This fourth helix associates with “media,” “creative industries,” “culture,” “values,” “life styles,” “art,” and perhaps also the notion of the “creative class.”

- **Innovation Networks:** Innovation networks are real and virtual infrastructures and infratechnologies that serve to nurture creativity, trigger invention, and catalyze innovation in a public and/or private domain context (for instance, government–university–industry public–private research and technology development cooperative partnerships).
- **Knowledge Clusters:** Knowledge clusters are agglomerations of cospecialized, mutually complementary, and reinforcing knowledge assets in the form of “knowledge stocks” and “knowledge flows” that exhibit self-organizing, learning-driven, dynamically adaptive competences, and trends in the context of an open systems perspective.
- **Twenty-First Century Innovation Ecosystem:** A twenty-first century innovation ecosystem is a multilevel, multimodal, multinodal, and multiagent system of systems. The constituent systems consist of innovation metanetworks (networks of innovation networks and knowledge clusters) and knowledge metaclusters (clusters of innovation networks and knowledge clusters) as building blocks and organized in a self-referential or chaotic fractal knowledge and innovation architecture,⁴ which in turn constitute agglomerations of human, social, intellectual, and financial capital stocks and flows as well as cultural and technological artifacts and modalities, continually coevolving, cospecializing, and cooperating. These innovation networks and knowledge clusters also form, reform, and dissolve within diverse institutional, political, technological, and socioeconomic domains, including government, university, industry, and nongovernmental organizations, and involving information and communication technologies, biotechnologies, advanced materials, nanotechnologies, and next-generation energy technologies.

For whom is this book series published? The book series addresses a diversity of audiences in different settings:

1. *Academic communities.* Academic communities worldwide represent a core group of readers. This follows from the theoretical/conceptual interest of the book series to influence academic discourses in the fields of knowledge, also carried by the claim of a certain saturation of academia with the current concepts and the postulate of a window of opportunity for new or at least additional concepts. Thus, it represents a key challenge for the series to exercise a certain impact on discourses in academia. In principle, all academic communities that are interested in knowledge (knowledge and innovation) could be tackled by the book series. The interdisciplinary (transdisciplinary) nature of the book series underscores that the scope of the book series is not limited a priori to a specific basket of disciplines. From a radical viewpoint, one could create the hypothesis that there is no discipline where knowledge is of no importance.
2. *Decision makers—private/academic entrepreneurs and public (governmental, subgovernmental) actors.* Two different groups of decision makers are being addressed simultaneously: (1) private entrepreneurs (firms, commercial firms,

⁴ Carayannis (2000).

academic firms) and academic entrepreneurs (universities), interested in optimizing knowledge management and in developing heterogeneously composed knowledge-based research networks; and (2) public (governmental, subgovernmental) actors that are interested in optimizing and further developing their policies and policy strategies that target knowledge and innovation. One purpose of public *knowledge and innovation policy* is to enhance the performance and competitiveness of advanced economies.

3. *Decision makers in general.* Decision makers are systematically being supplied with crucial information, for how to optimize knowledge-referring and knowledge-enhancing decision making. The nature of this “crucial information” is conceptual as well as empirical (case-study-based). Empirical information highlights practical examples and points toward practical solutions (perhaps remedies), conceptual information offers the advantage of further-driving and further-carrying tools of understanding. Different groups of addressed decision makers could be decision makers in private firms and multinational corporations, responsible for the knowledge portfolio of companies; knowledge and knowledge management consultants; globalization experts, focusing on the internationalization of research and development, science and technology, and innovation; experts in university/business research networks; and political scientists, economists, and business professionals.
4. *Interested global readership.* Finally, the Springer book series addresses a whole global readership, composed of members who are generally interested in knowledge and innovation. The global readership could partially coincide with the communities as described above (“academic communities,” “decision makers”), but could also refer to other constituencies and groups.

Elias G. Carayannis

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Contents

1	Universities in Change: As a Brief Introduction.	1
	Andreas Altmann and Bernd Ebersberger	
 Part I The Entrepreneurial University		
2	Leading the Entrepreneurial University: Meeting the Entrepreneurial Development Needs of Higher Education Institutions.	9
	Allan Gibb, Gay Haskins and Ian Robertson	
 Part II Embedding in the Economic and Social System		
3	Reinventing Learning and Research in the Twenty-First Century via the Academic Firm and the Entrepreneurial University	49
	Elias G. Carayannis and Piero Formica	
4	Demographic Trends and the Internationalisation of Higher Education: Emerging Challenges and Prospects	59
	Joe Nellis and David Slattery	
5	Global Learning in American Higher Education: Strategies for Developing Global Citizens in an Era of Complex Interdependence	75
	Carlos E. Juárez	

6	Universities Between Politics and Economics: Autonomy, Performance Agreements and Global Budgets at Austrian Universities	87
	Manfried Gantner	
7	Who is Leading Whom, Where to, What for: And How? Governance and Empowerment in the University of the Twenty-First Century	117
	Wilhelm Krull	
 Part III Strategic and Operative Issues		
8	Learning From the Best: Implications From Successful Companies for Higher Education Management	137
	Kurt Matzler and Dagmar Abfalter	
9	Managing and Positioning of a Private Business School in Germany	155
	Judith Marquardt and Hans Wiesmeth	
10	Strategic Management for Growing Business Schools	171
	Dirk W. Rudolph and Udo Steffens	
11	Training Researchers in the Asia-Pacific: A Regional Response to Global Leadership in Research	201
	Jeremy S. Eades and Malcolm Cooper	
12	The Rejuvenation of a Professional School in the United States	217
	Alfred S. Posamentier	
13	Curriculum Change at a Japanese Private International University: The Influence of Global and Local Pressures on the ‘NEW’ Challenge	229
	Malcolm Cooper	
14	Leading-Edge Technologies and Facility for Competitive Higher Business Education	241
	James R. Haltiner and Gabriel A. Pall	
15	Leveraging Universities Through IT Governance	265
	Peter Mirski and Dietmar Kilian	

16 Achieving Success Through Quality: The Role of Accreditation and Continuous Improvement in Management Education 277
John M. Beehler and Denise J. Luethge

17 Uniformity is No Virtue 293
Ekkehard Kappler

Part IV Contributing to Economic and Social Development

18 Higher Education Institutions and Regional Development 311
Bernd Ebersberger, Sverre J. Herstad and Andreas Altmann

19 What Type of Companies Benefits from University Spillovers? . . 323
Bernd Ebersberger, Andreas Altmann and Sverre J. Herstad

20 Globalization, Regional Development, and the Evolving Local University Role: The Case of Vestfold, Norway 339
Sverre J. Herstad and Thomas Brekke

Index 361

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Chapter 1

Universities in Change: As a Brief Introduction

Andreas Altmann and Bernd Ebersberger

Universities have always been changing. Ever since the inception of the first universities at the end of the twelfth century universities have responded to changing societal, economic, and political contexts. Cumulatively this process of change created a university system at the turn of the twenty first century, that is completely different from the system of centuries ago. This can be exemplified in three basic characteristics of the university system (Brockliss 2000). First, the size of the university sector has increased. For instance, the number of European universities has grown from 40 in the 1400s to 150 in the early twentieth century. In the mid-1980s there were 500 universities in Europe and this number has been growing continuously through higher education institutions obtaining university status, for instance in the UK . There the number of universities has increased by a factor of 2.5 since the early 1980s. Second, and not completely unrelated, the number of students has increased continuously. Brockliss (2000) identifies three growth periods, the thirteenth century, the sixteenth to the early seventeenth century, and the late 19th to the early twentieth century, which, however, does not compare at all to the growth experienced since the 1960s. While in the sixteenth century about 2.5 % of the male population enjoyed what now is a tertiary education (Brockliss 2000), it is currently in the Western Economies slightly less than 30 % of all adults (OECD 2010).

Third, the university's mission and context evolved from a traditional and medieval role as a storehouse of knowledge (Youtie and Shapira 2008) with a distinct teaching mission in the four sciences: theology, law, medicine, and philosophy. By

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and large the Humboldtian reforms contributed to the development of an organization where teaching and research were equally important. The university developed from a storehouse of knowledge to a locus of knowledge development (Youtie and Shapira 2008). In parallel with the new mission the portfolio of subjects changed, whereby the natural sciences, the humanities, and the arts developed rather independent curricula, methods, and approaches (Brockliss 2000). Further refinement of the universities' subject map contained the development of engineering sciences and social sciences.

This process went along with the universities assuming a more active role in society and economy and educating students in these technical disciplines, which met the needs of the growing industrial demand for skilled labor. Newly founded universities stressed their value to industry by applied research and teaching; see for instance the foundation of the MIT (Youtie and Shapira 2008) or for instance the Technical University of Munich (TUM 2011).

In addition to the two modes—storehouse of knowledge and locus of knowledge development—at the end of the twentieth century universities developed a third variant by adding a third dimension to their mission: The university is to support regional and local economic and social development (e.g., Etzkowitz et al. 2000; Etzkowitz 2003). This additional mandate is highly appreciated and supported by policy makers as it implicitly promises a new and expanding source of university financing (Slaughter and Leslie 1997). This new mode transcends the previous ways of university–industry interaction and results in a triple helix metaphor to describe the threefold interaction between universities, industries, and government (Etzkowitz and Leydesdorff 1999). Consequently, this new mode entails a university's strong position in the post industrial and knowledge-driven economy (Youtie and Shapira 2008).

Universities are seen as an integral part of the innovation system (Mowery and Sampat 2005), which includes a new and growing set of activities beyond the ivory tower (Rothaermel et al. 2007), which is not generally found to be rejected by faculty members (Van Dierdonck et al. 1990; Lee 1996). Basically, the third mission of universities paves the way for the concept of the entrepreneurial university. Gibb et al. (in this Volume, Chap. 2) give a broad analytical overview over the concept of entrepreneurial universities and the related discussion.

Universities can be entrepreneurial basically in two ways. The first way directly refers to the third mission increasingly found with a modern university. It relates to academic entrepreneurship, that is, it implies the commercialization of knowledge and research findings. In a sense, here, universities pursue the third mission by becoming knowledge entrepreneurs or knowledge hubs (Youtie and Shapira 2008) basically linking research—the second mission—and societal development—the third mission. The second way for a university to become entrepreneurial relates teaching as the first mission to the third mission, that is, supporting economic and social development. Generally, the entrepreneurial dimension is not only reduced to the coupling of research and commercialization. The entrepreneurial dimension of universities is represented here by the understanding that universities operate on

a market for education (Gjerding et al. 2006), which usually rewards actors' entrepreneurial approaches (Guerrero and Urbano 2010).

For a university to become more entrepreneurial university management has to install appropriate incentive structures (Friedman and Silberman 2003). It has to ensure the provision of appropriate infrastructure (Gjerding et al. 2006). And it has to adopt a business inspired decentralized management style (Debackere and Veugelers 2005). In addition, a change in the (corporate) culture of the university is crucial (Jacob 2003; Gjerding et al. 2006). Yet, research suggests that the economic and business rationale, which is part of the internal organizational logic of an entrepreneurial university, cannot be shared by all parts of the faculty. Research suggests that parts of the faculty might maintain dysfunctional mental models toward business activities per se (Laukkanen 2003).

Too strong a dependence on entrepreneurial activities and too strong an influence of economic interests might cause the entrepreneurial universities to risk their autonomy (Slaughter and Leslie 1997). The concept of the entrepreneurial university as discussed in Gjerding et al. (2006), however, seems to accept the change of the societal and economic context, in which the universities operate. Yet, both views share a passion in favor of the autonomy of universities.

The above discussion entails three major areas, from where challenges for the management of universities originate and which have to be mastered by universities under a continuous process of change.

1.1 Embedding in the Social and Economic System

The third mission relates universities to their immediate environment, which they are to affect positively. The embedding of the university in an innovation system (Mowery and Sampat 2005) or in a entrepreneurial society (Audretsch 2007) leads to multiple and systemic interaction with various partners following different idiosyncratic rationales. As different systems, in which universities are embedded, are characterized by different institutional arrangements, different cultures of interaction, different development paths and dynamics, as well as different distributions of relevant other actors (e.g. Liu and White 2001; Asheim and Coenen 2005), entrepreneurial universities have to pursue various strategies and new organizational arrangements to support the generation and exploitation of knowledge and technology (Leydesdorff and Meyer 2003) jointly with governmental and industrial partners through teaching and commercialization. Hence, location does not only affect the performance of entrepreneurial universities (Friedman and Silberman 2003), but it also determines through the regional context, which external challenges the university has to master and which restrictions or constraints the university has to accommodate. In particular, the contributions in this volume focus how universities approach these challenges. They cover general temporal trends (Formica and Carayannis, in this Volume, Chap. 3), demographic trends and internationalization (Nellis and Slattery, Chap. 4

; Juarez, in this Volume, [Chap. 5](#)), political and regulatory constraints (Gantner, in this volume, [Chap. 6](#)), and dynamic change within the system and its repercussions (Krull, in this Volume, [Chap. 7](#)).

1.2 Strategic and Operative Issues

These issues arise in response to societal and economic changes and in response to changing demands. When responding to these changes the key challenge for university management in the era of entrepreneurial universities is to foster entrepreneurial activities of the academics in various ways without endangering the mission to diffuse knowledge through teaching and to develop knowledge through research on the basis of the basic and unique principle which sets universities apart: academic freedom of the individual academic and autonomy of the organization (e.g. Rothaermel et al. 2007).

If academic freedom is to be maintained university management does not have full control over the academics' activities; an overall boundary setting strategy, which is termed an 'umbrella strategy' by Mintzberg and Waters (1985) can serve as a general university internal framework to direct entrepreneurial and other activities within the organization and to guide university management when establishing an appropriate incentive framework (Grigg 1994). When it comes to tailoring incentive schemes for entrepreneurial activities the majority of research suggests that incentivizing academics generates positive effects (e.g. Friedman and Silberman 2003; Debackere and Veugelers 2005). Fundamentally, the members of a university have to become entrepreneurial in their interaction among themselves and with their environment for the university to be successful (Guerrero and Urbano 2010).

A coherent strategic orientation facilitates the success of entrepreneurial universities. Matzler and Abfalter (in this Volume, [Chap. 8](#)) take the entrepreneurial university by the very meaning for the word and show what universities can learn from the strategies of high performing firms. Wiesmeth and Marquardt (in this Volume, [Chap. 9](#)) discuss the positioning and the management of a private business school, which can be considered the successor of the oldest and most traditional business school in Germany. Steffens and Rudolph (in this Volume, [Chap. 10](#)) demonstrate how strategic management tools and techniques can be applied to foster the growth of business schools. Posamentier (in this Volume, [Chap. 12](#)) illustrates by anecdotal evidence the hardships of change. Cooper and Eades (in this Volume, [Chap. 11](#)) focus on research as the second mission of universities and how research capacity can be strengthened in a regional context. In turn Cooper (in this Volume, [Chap. 13](#)) refers to teaching as the first mission of universities and illustrates curriculum change processes in the light of global and local pressures on education in an institution that, before now, has operated within the close confines of a local Japanese context.

Covering the more operative end of the spectrum of activities university management of an entrepreneurial university, Pall and Haltiner (in this Volume, [Chap. 14](#)) as well as Mirski and Kilian (in this Volume, [Chap. 15](#)) show that the provision of infrastructure—the built environment in the case of Pall and Haltiner and the IT environment in the case of Mirski and Kilian—forms a crucial function of university management and that the provision of high quality infrastructure is key for the success of universities.

Measuring the success of higher education institutions is a necessary, yet not trivial task. Luethge and Beehler (in this Volume, [Chap. 16](#)) and Kappler (in this Volume, [Chap. 17](#)) discuss this issue from two opposing perspectives. The former focuses on the role and in particular on the benefits of accreditation in the context of business schools, whereas the latter takes a more critical stance and discusses measurement problems associated with evaluation and accreditation from a more general point of view.

1.3 Contributing to Economics and Social Development

The contribution to economic and social development of the universities, environment is the starting point of the discussion. Ebersberger et al. (in this Volume, [Chap. 18](#)) conceptually discuss this proposition from different theoretical perspectives. Although some parts of the literature about entrepreneurial university maintain a strong affinity to protection of IP and to the management of IPRs through specialized units, such as the technology transfer offices in order to limit spillovers and to facilitate commercialization of developed knowledge (see the summary in Rothaermel et al. 2007). However, Clark et al. (2007), for instance, do not explicitly mention the protection of knowledge, rather they directly relate to the third mission by referring to a well-structured technology transfer process into the region. Hence, entrepreneurial universities can pursue the third mission by managing the spillovers, and by allowing and facilitating spillovers (Ebersberger et al. , in this Volume, [Chap. 19](#)). Universities can contribute to regional economic development by the three channels highlighted by the three missions. Herstad and Brekke (in this Volume, [Chap. 20](#)) highlight a case of a regional university and its influence on regional economic and technological development.

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Part I
The Entrepreneurial University

Chapter 2

Leading the Entrepreneurial University: Meeting the Entrepreneurial Development Needs of Higher Education Institutions

Allan Gibb, Gay Haskins and Ian Robertson

This paper focuses on the leadership challenge facing staff of universities across the world in moving their institutions to a more entrepreneurial mode (Bernasconi 2005; Keast 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.¹ The paper has an action and innovation focus in that it constitutes part of the preparation for the development of the Entrepreneurial University Leadership Programme which was launched in 2010 at Oxford University's Said Business School for senior university leaders. This program now runs annually with the National Council for Entrepreneurship in Education (NCEE, formerly called the National Council for Graduate Entrepreneurship) and Universities UK as lead partners. This paper demonstrates the thinking and concepts behind the program and is used as key background material.

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

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2.1 Introduction

There is now a considerable international literature addressing the notion of what has been termed ‘the entrepreneurial university’ (Wasser 1990; Clark 1998; Currie 2002; Barsony 2003; Jacob et al. 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 organizations (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 (Coaldrake and Stedman 1999; Smith and Langslow 1999; Maskell and Robinson 2001; De Ziva 2005) and the culture of the university (Daumard 2001; Davies 2001; Mendoza and Berger 2005);
- the commercialization of university know-how (Cook et al. 2008);
- the process of technology transfer and exchange (CVCP 1999; Leydesdorff and Meyer 2003; 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 among 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 labor market (HEFCE 2003; European Commission 2005; ESECT 2005; Leitch 2006);
- the strategic response to the ‘massification’ of demand for higher education (Smith 1999; Shattock 2000);
- the internationalization of universities (Noir sur Blanc 1999; Kwiek 2000, 2001; Knight 2003; Altbach 2005; Altbach and Knight 2006; OECD 2004) 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 organization 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 2008);
- 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; Mittelstädt and Cerri 2008);
- the autonomy and future funding of universities (Darling et al. 1989; Greenaway and Haynes 2003; Li-Chuan 2004; Moses 2005; Bridgman 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 et al. 2007; Pan 2007). There are 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 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 2006) which are increasingly directive (Slaughter and Leslie 1997; Hayrinen–Alestalo 1999; Henkel 2004). In general, (but not universally²) governments throughout the world still hold considerable sway over the sector because of its substantial dependency upon the public purse (Williams 2009).

All of the above pressures have served to shape change in organization 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, 2005). 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, 2004; Wissema 2008; Etzkowitz 2008), but without full exploration of the entrepreneurial organization 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 organization 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 briefly above.

The remainder of the paper is organized as follows. Firstly, 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. Secondly, there is an analysis of the challenge to organization design as well as individual academic

² See, for example, the cross country analysis in IHEP (2009).

response, and how this relates to notions of the entrepreneurial organization. Thirdly, there is exploration of the leadership challenge and its particularly entrepreneurial flavor. Fourthly, there is a summary of what this means for the development of leaders and key managers in higher education institutions and how the Entrepreneurial University Leadership Programme was conceived and designed to meet their development needs.

2.2 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, Chap. 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 routinized bureaucratic patterns of response.

The changing dynamic environment of higher institutions and their respondent evolution (Doutriaux and Barker 1996; Kohler and Huber 2006; Wissema 2008) is portrayed in Fig. 2.1. The figure attempts to characterize the evolving nature of the task environment facing universities on a simple/complex and certain/uncertain axis.³ It highlights the way that the notion of ‘Excellence’ might be changing (Corbett 2006; Deem and Lucasa 2008; Huisman 2008; Wissema 2008). Within this frame, it seeks to summarize their response as evidenced by a growing body of the 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 universal (with some private university exceptions, to be observed mainly in the US) of almost total central or regional public funding, to a situation where a growing proportion of finance has to be sought from nondirect 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

³ Derived from Lawrence and Lorsch (1986), Covin and Slevin (1991) and Gibb (1985). Acknowledgement also 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.

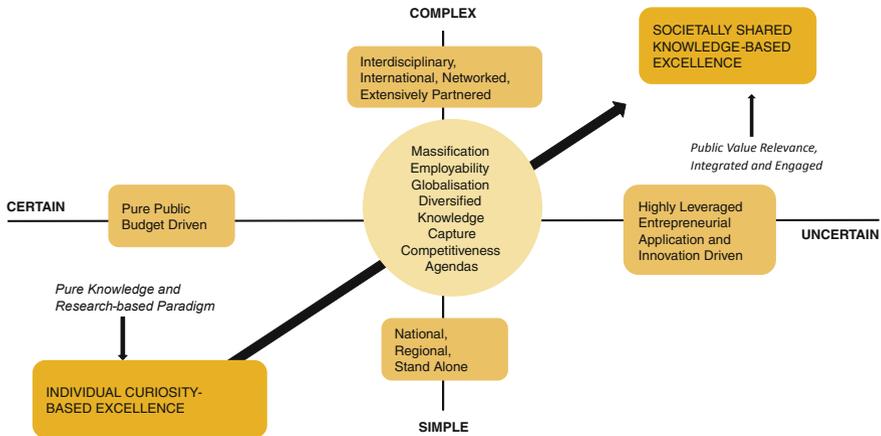


Fig. 2.1 The changing university paradigm

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 (for example Finland) are providing direct financial incentives to higher education institutions to leverage public funding.

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.

2.2.1 The Massification of Higher Education

Of major importance is the move to what has been labeled 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 and many of them are now funding more of their own education through personal debt. There is already evidence of this in the UK⁴: this situation has been considerably exacerbated by the 2009 global crisis.

⁴ Student protests across the UK. BBC News Wednesday November 5 (2008).

2.2.2 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 labor 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).

2.2.3 The Student Voice

Against the above backdrop, there has been a substantial growth of student societies in universities across the world many of them linked internationally in partnership.⁵ They are becoming the vehicle for articulating the student need for entrepreneurship curriculum in the university. 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’ (www.oxfordentrepreneurs.co.uk), has a membership of several thousand students. It has a full time (1 year sabbatical) president and runs a variety of activities, including competitions, networking and counseling events, start-up workshops, guest speaker presentations, placement programs, and links to venture capital. These societies become a mechanism for articulating student need to the university and demand for entrepreneurship programs across the whole curriculum (Edwards 2001). While they generally operate with a considerable degree of autonomy they can benefit substantially from dedicated staff and faculty support (Williamson et al. 2009).

⁵ See, for example, the work of Students in Free Enterprise (www.sife.org), European Confederation of Junior Enterprises (JADE) (www.jadenet.org), and National Consortium of University Entrepreneurs (NACUE) (www.nacue.org).

2.2.4 Developing Entrepreneurial Skills

The 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 the 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 and Hee Ang 1995; Ravasi and Turati 2005; Gibb 2007). This includes the capacity to design organizations of all kinds, public, private, and NGO, to support effective entrepreneurial behavior (Barrie 2007). This focus has implications for the 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 organizational processes necessary to the support of 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 university teaching staff (Coaldrake and Stedman 1999; Roman et al. 2008). This is far from the conventional business school model. The approach also, however, has implications for the organizational structures that will support the embedding of such an entrepreneurial concept within the institution (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 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 them are now engaging with external agencies on the development of programs for enhancing a range of graduate entrepreneurial skills as well as capacity for self employment (www.ncee.org.uk). This shift in emphasis has major implications for the development of their own staff.

2.2.5 The Challenge of Globalization

Graduate employment futures, in the context of a global labor market, are characterized by frequent changes in job, occupation, and location, also potentially involving 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 (EU 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 globalization and the changes demanded or resulting from wide ranging global pressures (Kwiek 2000, 2001; Toakley 2004; Scase 2007) on the one hand, and internationalization or the processes by which a university seeks to respond to threats and opportunities on the other. In short, globalization is an external force and internationalization is a response to that force. Distinctions can, thereafter, be made among the motivations of universities to internationalize, 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 internationalization 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: internationalization 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.

2.2.6 The Internationalization Strategies of Universities

Commitment to internationalization involves elements of entrepreneurial risk taking and strategic choice (Knight 2003). Figure 2.2 encapsulates the various target processes and activities involved in internationalization. Some of these activities and processes carry more risk than others. Establishing overseas campuses, for example, entails high risk. 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). The centre-point of Fig. 2.2 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. Overall, in outcome evaluation terms, there will be a need to measure the degree to which the activity brings both status and material rewards (income and other resources) that are sustainable. The former appears to be as important, if not more so, than the latter—although in the long run the two are intimately related.

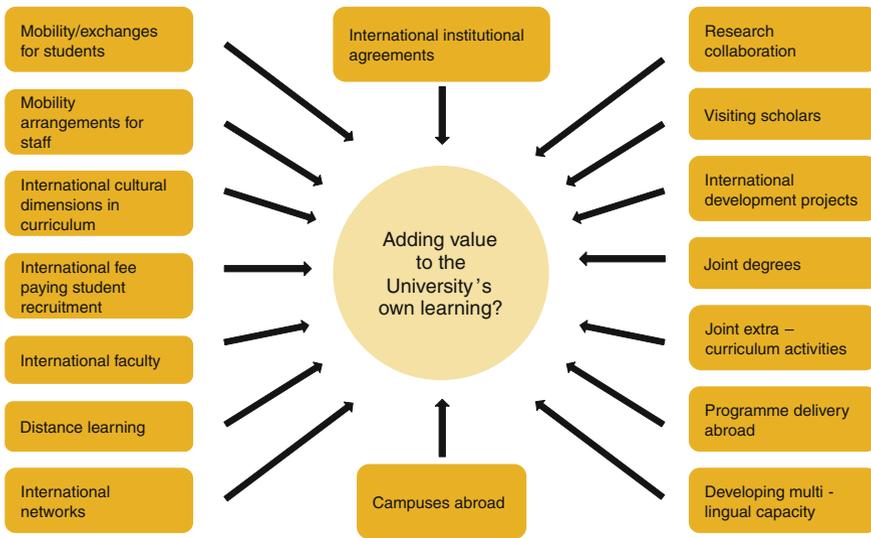


Fig. 2.2 Activities and processes involved in university internationalization

2.2.7 The Global Knowledge Configuration

A major influence upon the drive to internationalization 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 has no respecter of traditional disciplines and more open to the organization of knowledge on a ‘need to know’ and issue basis. It challenges the monopoly that universities have hitherto had on the organization 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 by, increasingly, 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.’ Also, it is 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.

2.2.8 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 the 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.

An almost universal approach to dealing with this problem has 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 programs 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 organization 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 the literature (Hughes 2003; Link 2006; Dooley and Kirk 2007; Abreu et al. 2008) argues that the key to successful knowledge transfer is a process of continuous dialog 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 even been 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, being prepared to engage in the 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