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School of Management

STRATEGIES IN TRADITIONAL HIGHER EDUCATION: LESSONS FROM A
NEWCOMER?

by

Anne-Marie De Jonghe

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Abstract

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This research project examines an institutional newcomer with a new organisational model for higher education, a virtual university, aspiring to be a "real university". Carried out over the periods 2002-2003 and 2008-2009, the research process aimed to identify to what extent this virtual university is different and what traditional universities can learn.

Based upon a qualitative study of a virtual university, a newcomer in the higher education system in Spain, compared over two different time periods, this project found ample evidence of institutional change, continuous introspection and innovation, as well as critical awareness of weaknesses which needed to be overcome.

It derived lessons from the institutional change processes, explaining why and how this institution could address the increasing needs of universities and the pressures they were facing. The project leads to a change model showing that the management of internal factors (focus on the learning of the student and general use of ICT) as well as the external factors (needs of the knowledge society for lifelong learning, public-private partnership, external regulation and technological developments) of the institution could be successfully integrated.

Success has been achieved by the leadership respecting specific values, such as the conduct of research and quality in teaching and learning, which are related to "real universities". The institution was able to organise the necessary support (reorganisation of work processes based on updated ICT and adaptation of the organisational model) to make it all work effectively and efficiently.

From the findings of this study, it follows that traditional universities could be winners if they acknowledge the implications for their own strategy and organisational model. It means

rebalancing the elements of their complex mission and rethinking organisational roles together with enhancing all the aspects of the mission via the new technologies. This research project coincides with a growing awareness in public policy debates in Europe of the importance of improving the quality of teaching and learning by changing the culture of teaching in higher education and realizing the transformative power of ICT, allowing for collaborative ways of knowledge construction based on learning demands from the student. One of the findings of this project is that the main challenges – and opportunities – may not be technical, but rather strategic and organizational in nature.

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Declaration of authorship

I, ANNE - MARIE DE JONGHE, declare that this thesis entitled:

Strategies in traditional higher education: learning from a newcomer?

and the work presented in this thesis are both my own, and have been generated by me as the result of my own original research. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University;

- Where any part of this thesis has previously been submitted for a degree or any other qualification at this university or any other institution, this has been clearly stated;

- Where I have consulted the published work of others, this is always clearly attributed;

- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;

- I have acknowledged all main sources of help;

- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done and what I have contributed myself;

- Initial parts of this work have been presented as working papers for course work and /or were published as:

De Jonghe, A.M. (2000). *Case write up about K.U.Leuven (Belgium) Research and Development*, Deloitte & Touche (UK) for HEFCE (UK), financial strategy project, unpublished document.

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De Jonghe, A.M. (2003b). UOC, "A Case of Dramatic Change: Leapfrogging Traditional Universities", University of Bath, School of Management (DBA in Higher Education Management), November 2003, working paper.

De Jonghe, A.M. (2004c). The Teaching-Research Tension in Universities: Causes, Consequences and Management Issues, University of Bath, School of Management (DBA in Higher Education Management), February 2004, working paper.

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De Jonghe, A.M. (2007f). Dealing with dilemmas in contemporary higher education. In M.K. McCuddy, H. van den Bosch, Jr.Wm.B. Martz, A.V. Matveev,K.O. Morse (Eds.) (2007).*The challenges of educating people to lead in a challenging world*. Dordrecht (NL): Springer, pp. 73-93.

Signed: Anne-Marie De Jonghe

Date: August, 2014

Preface and acknowledgements

This thesis is the result of creative output of the last 10 years combined with the informal and formal learning of my working life. I had the opportunity to switch between the world of academia and the world of management several times. It is also a personal story of change at the individual level.

After about 20 years of working in the banking sector, I decided to switch from business to social goals. I became involved in non-profits working in the field of media for children and youth, in sustainable traffic and mobility policies and in education; all important issues for the 21st century. As my two young daughters were going to live in the 21st century, I decided to concentrate further on the education field.

I have been a life long learning enthusiast since the beginning of my early career. I had the privilege to experience different higher education systems in Continental Europe, in the USA and in the UK. In moving between countries and crossing boundaries, I could experience different styles of academic structures and styles, which brought about a wider self development. I also combined a traditional academic background with on the job training, executives programmes and post graduate study.

I transferred from the University of Bath to the University of Southampton. This thesis is the result of work done mainly while in candidature for a research degree at the University of Southampton. At the University of Bath, new practices for DBAs were introduced. We were advised to use a diary to write down our personal development in the domain, reflecting on our reasons for doing the course and our aspirations for education and further career. Meanwhile I had the opportunity to serve as the director general of the Flemish Rectors Conference in Belgium and experienced in person the tensions which are still dividing the academic community as recently confirmed by Rothman, Kelly-Woessner and Woessner (2011) in their study of conflict in the American University.

What was it about me and my values that compelled me to follow this path? The confrontation with tensions in higher education, a discourse, which causes "(real and imagined) unhappiness", as Watson (2009, p 1) emphasized recently, oriented my research towards these tensions and ways to solve them. I am convinced that the transformative power of e-learning can contribute to easing the tensions. It will be a key theme in what follows.

There is, however, a freedom to innovate and a freedom to resist. Innovation is a threat to embedded cultures, which are exam-based, learning and teaching styles and often preferred by the experts in the disciplines. Innovation is context driven. What is accepted in one institution or discipline can be very new to another. It will take time to convince the academic disciplines to embrace "open" (shared with others) innovation (Menand, 2010). In my opinion, we have to avoid the structure of the research universities with specialized departments, which causes dogmatization and politisation and further stagnation of knowledge (Menand, 2010; Duderstadt, 2000).

Part of the sciences have already moved further ahead e.g. by building their structures outside or in the periphery of the traditional university (by means of spin-offs, inter-university research laboratories, special research centres etc.). However, a major change is long overdue especially in the social and behavioural sciences, in order to revive or develop novel approaches in methodologies, perspectives and coverage, often spanning different fields and disciplines, building alliances or bridges so much needed to address the real problems of today's complex society.

The roles of academics are changing and new types of academics (e.g. part time non tenured faculty) are coming in (Finkelstein, 2009; Kehm, Teichler, 2013). I hope they will be better prepared to coach and to learn with the student, based on integrated technology of the 21st century.

Abbreviations and definitions

AACSB: Association to Advance Collegiate Schools of Business

AGAUR: University and Grant Management Agency (Spain)

AHELO: Assessment of Higher Education Learning Outcomes

AQU: Catalonian Quality Agency

Bologna Process: Higher Education reform process. The aim of this process is to create a European Higher Education Area based on international cooperation and academic exchange.

Bologna Follow Up Group: This Group coordinates the Bologna process at the international level and implements the work programme between consecutive ministerial conferences.

CSSC: Case Standards Setting Committee

CHE: Centrum fûr Hochschulenentwickelung (Centre for Higher Education Development, Germany)

CHERPA- Network Consortium: The Consortium for Higher Education and Research Performance Assessment.

EADTU: European Association for Distance Teaching Universities

ECCH: European Case Clearing House

ECCHO: The newsletter of the European Case Clearing House

ECTS: European Credit Transfer System

EDUCAUSE: A non-profit which is promoting the intelligent use of Information Technology

EFQUEL: European Foundation for Quality in E-Learning

EFQM: European Foundation for Quality Management

EHEA: European Higher Education Area

E-Learning: Used as a general term to indicate any involvement of technological means. It is necessary to look at the delivery to really see what is going on.

ENJOY guidelines: guidelines for designing engaging e-learning environments

ENQA: European Network for Quality Agencies

ERA: European Research Area

ERC: European Research Council

EUA: European University Association

EQUIS: The European Quality Improvement System. Accreditation system for international business schools

FUOC: Foundation for the Universitat Oberta de Catalunya

GIL: Guided Independent Learning

HEI: Higher Education Institutions

IALEI: International Alliance of leading education institutes

ICT: Information and Communication Technologies

IGI: International Graduate Institute

IMS GLC: Instructional Management Systems Global Learning Consortium

IN3: Internet Interdisciplinary Institute

JISC: Joint Information services Committee (UK)

LERU: Leading Research Universities

LLL: Life Long Learning

MIT open course ware: Massachusetts Institute of Technology; free online course materials

MyUOC: Educational portal of the Universitat Oberta de Catalunya

NACRA: North American Case Research Association

NMC: New Media Consortium

OECD: Organisation for Economic Cooperation and Development

OER: Open access to Educational Resources

Traditional universities: This term has to be understood as referring to the mature higher education sector as a whole. See Structure, Footnote 1 and chapter 1.1

RAE: Research Assessment Exercise

R&D: Research and Development

UOC: Universidad Oberta de Catalunya

UNED: National Distance University of Spain

UNESCO: United Nations Educational, Scientific and Cultural Organisation

Virtual Campus: It refers to online activities but it is necessary to look at what is really going on. A web based learning process involves several other aspects besides including technology.

Web 2.0. technologies: A category of new internet tools and technologies created with the purpose of enabling people to be active contributors and customize media and technology for their own purposes and for their communities.

WACRA: World Association for Case Method Research and Application

Structure

The structure of this thesis is as follows:

In the first chapter, I introduce the key issues which led to this study. I elaborate on the rise of the knowledge society and its context, which brought new demands facing the higher education sector, such as the need for lifelong learning and mass participation. Such ideas are becoming a part of the mission of traditional universities, which, however, have difficulties in adapting to this need because they are too busy with other issues.

My study intends to address the gap in knowledge which exists between the knowledge about technology (ICT) as a substitute or a complement to deliver courses, and the way ICT can really transform the business model of universities by changing the way of working and organisation in universities. Therefore, I will make an attempt, in the second chapter, to present a literature review on the current strategic challenges facing traditional universities[1]. There is the tension between, on the one hand, being an organisation, which protects the traditional academic values, a professor-centred view and a focus on research, and, on the other hand, being a modern constructivist organisation, with a focus on learning in which the relationship with the student is central. In the third chapter, I will discuss the role of new technologies, which are not fully exploited. Physical campus teaching is still important and ICT-supported teaching is merely seen as a pedagogical tool and not as a strategic tool that can transform learning.

In the fourth chapter, I mention my research questions, which follow from the results of my literature review. In the remainder of the chapter, I will discuss my research methods and my approach which is mainly based on the case study methodology. I use the constructs about

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[1]   Traditional universities: This term has to be understood as referring to the mature higher education sector as a whole. I explain this in chapter one, section 1.1 and subsection 1.1.1, when, I refer to Levine (1997), who compares the higher education sector with mature industries.

     Many individual higher education institutions are indeed trying out different strategic approaches to cope with the changing environment. This means making choices. Therefore two questions need to be answered: Where should we compete? E.g.through acquisitions, through allocation of resources? How should we compete? E.g. what will make us different and give us a competitive advantage?

challenges and tensions arising out of the literature referred to in chapter 1, 2 and 3 to examine, in chapter 7, how the case is dealing with these tensions. The case is described in chapters 5 and 6, at two different points in time as pointed out hereafter.

In the fifth chapter, I will first give an introduction to the Spanish University System - because context is important - before presenting the case of the Universidad Oberta de Catalunya (UOC), a virtual university and a newcomer in the higher education sector.

In the sixth chapter, I give an update of the case and analyse the changes that took place at UOC following the first research period.

In chapter seven, I will discuss the response to the research questions introduced at the beginning of chapter four and indicate in what ways this university is distinctive. On the basis of the key features deducted from studying the UOC case, I will indicate why and how it is in a position to better address increasing needs of universities and the pressures with which they are confronted. In chapter eight, I will indicate what traditional universities can learn from this experience and what they might do better than the newcomer.

In chapter nine, I will give an overview of the thesis, indicate my contribution to knowledge in higher education and give some reflections on the future of higher education.

1. New organisational models needed for traditional universities in the age of lifelong learning.

1.1. The need for new organisational models for universities in the lifelong learning age

In recent decades, many changes have taken place which impacted on universities. Universities have to reinvent themselves if they want to stay a key player in the knowledge society, where many new knowledge providers are coming in, often based on new organisational models (Peterson, Dill, 1997). Organisational models of universities are being questioned (European Commission, 2006; Ernst & Young, 2012). Hanna (1998, p. 68) states that "the more than three thousand traditional higher education institutions (HEIs) in the USA vary greatly in mission, size, curriculum, selectivity, faculty expertise and background, level of offerings and type of location". Despite this variety, Hanna (1998, p. 69) defines the basic characteristics of traditional HEIs as following:

- "A residential student body;

- A recognized geographic area from which the majority of students are drawn;

- Full-time faculty members, who organize curricula and degrees, teach in face to face settings, engage in scholarship, often conduct public service, and share in institutional governance;

- A central library and physical plant;

- Non profit financial status;

- Evaluation strategies of organizational effectiveness based upon measurement of inputs to instruction, such as funding, library holdings, facilities, faculty/student ratios, faculty qualifications and student qualifications."

Hanna (1998, p. 66) observes that there is a growing and changing demand for education among learners, who are asking "for improved accessibility and convenience, lower costs and direct application of content to work settings", in the USA as well as globally. Hanna (1998, p. 66) argues that the growing demand for learning combined with advances in digital communications and learning technologies is challenging "the dominant assumptions and characteristics of existing traditionally organized universities in the 21 st Century".

Three scenarios for higher education were presented by the Centre for Higher Education Policies and Strategies (CHEPS) of University of Twente (The Netherlands) (2004), on the occasion of their 20th birthday. The scenarios were based on a Delphi-survey. The survey was carried out in order to get a better idea about the opinion of higher education experts with regard to certain trends in higher education. The results of the two rounds of this survey were used as inputs for the scenarios (CHEPS, 2004, p. 5).The details of these scenarios, briefly discussed hereafter can be found in appendix 1.

The first scenario (CHEPS, 2004, pp. 8-22) consisted of a world (in the year 2020) in which most universities and research centres remained public places of discovery and knowledge dissemination but in addition they were part of large (national) institutions cooperating on a regular basis under the guidance of the European Commission.

The second scenario (CHEPS, 2004, pp. 23-34) presented the idea of a university which functions in a network as the main way of coordinating within as well as between institutions, their other providers and the consumers. Horizontal and vertical integration via the web is taking away the barriers between subsystems which previously performed different functions. The globalisation of the economy and the diverse life and career paths of individuals are part of these processes. Universities are part of this complex social system. Technology helps these universities in becoming "edgeless" (Bradwell, 2009, p. 8) while developing links with each other and society.

The third scenario (CHEPS, 2004, pp. 37-51) consisted of a highly competitive and diversified higher education market with many non-traditional higher education providers, including private ones, responsive to the needs of a broad range of learners and different economic sectors. In this scenario terms like the university, the higher education sector, the market and the academic profession are no longer used. The field is diverse and markets drive most of what happens.

Some authors have suggested that traditional universities can be compared to mature industries (Levine, 1997). Upon a closer look, however, the situation is more complex. Mature industries typically are confronted with slow growth and stagnant markets. The higher education sector, however, is growing because of the need for education. In his book "A University for the 21st century", James J. Duderstadt (2000, p. 290) mentions Arthur Levine's article about "Higher Education's new status as a mature industry" (1997) and suggests that some purposes of education cannot be put into an industrial model. According to him

(Duderstadt, 2000, p. 290), universities serve as responsible critics of society. They have also the intention of educating citizens necessary for a democratic society and of transmitting our cultural heritage from one generation to the next (Duderstadt, 2000, p. 290).

Many of the obstacles to change that traditional universities have to overcome originate in their past, in which they did not have to deal with increasing accountability and government demands, students as customers, and demands from new stakeholders in society. These obstacles are similar to those facing firms or organisations in mature industries, very often unable to rejuvenate themselves. Mature industries also have to deal with changing needs and conditions in the market, with changing government support and with demands for accountability. They need new ideas and methods in order to survive in this turbulent environment.

In the higher education sector many traditional universities exhibit characteristics of mature industries. While there are wide variations between universities[2], traditional universities typically encounter obstacles such as:

- constraints from their relationship with the government to which they are accountable (Trow, 1983),

- an unclear concept of their customers (Are They Students? Or "Customers", Eds. The New York Times, 2010),

- an often outdated and inadequate operational and organisational model, often unable to cope with the expanding mission (Duke, 1992; Hanna, 1998; Butera, 2000),

- a lack of clarity about the stakeholders having an interest in the university (Tetrevova, Sabolova, 2010) and

- a governance model, which is not adapted to the current challenges (Agasisti, Catalano, 2007).

If established players have a hard time adapting, real change in the provision of educational services, may come in the first place from newcomers, developing new segments, new products or services or new ways of operating, thereby providing the basis for renewed

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[2] Huisman et al. (2002) studied examples of 'alternative' universities set up in various European countries which were expected to develop a profile which would differ from established institutions of higher education.

growth and a new dynamism. As a result, it often appears that the maturity of the industry may well be the self-inflicted result of incumbents stuck in their own paradigms and practices, and misunderstanding the true nature or requirements of their customers (Levitt, 1960).

In many ways, universities may be facing similar challenges, as the traditional demand for their services may be stagnating or declining, but other needs and requirements lead to fantastic opportunities for new concepts to be implemented in teaching and learning and research and new ways of organising.

However, useful insights may still be drawn from comparing universities with mature industries. Mature industries go through rejuvenation - "a process of making something more effective, modern and successful by using new ideas and methods" (Cambridge Business English Dictionary Online, 2012). In their book "Rejuvenating the mature business", Baden-Fuller and Stopford (1992) show how organisations can rejuvenate from within, using limited outside resources.

1.1.1. Changing needs and conditions in the education market

In Europe at least, traditional universities have gone from an elite to a mass higher education system in the course of the last forty years. In Europe, the percentage of people taking part in higher education has grown substantially, even if it is still lagging behind the US (although the number of Americans, 25 to 34 years old, in higher education is falling behind[3]). Due to demands for trained knowledge workers and demands for new knowledge to deal with major problems in the world, a new approach is necessary to deal with the increased student numbers. For many years it was accepted that the global demand for education would rise from 100 million in the year 2000 to 250 million students by the year 2025 (Ruby, 2009, p. 5). The economic recession (since 2008) and its impact on the growth of the middle class (parents of consumers of higher education) and on the demand for higher education could

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[3]   According to the Lumina Foundation for Education mentioned in an article in science guide: "Leuven/Bologna inspires USA in HE-innovation" (June 3, 2009), www.scienceguide.nl/article.asp?articleid=107345 (June 4, 2009). Lumina's big goal is to increase the share of Americans with post secondary degrees from 39 % to 60 % by 2025. It looks for inspiration at the Bologna process and has initiated the project "tuning USA" with the aim of creating a shared understanding among higher education stakeholders of subject specific knowledge and transferable skills expected from students in six fields after the completion of the degree programme.

have an influence on the above mentioned number (Ruby, 2009, p. 6). Goddard, contributor to a book about Australian international education (Davis, Mackintosh, 2012), assumes that the student number will approach 262 million by 2025 (up from 178 million in 2010). It is mostly emerging countries, which will have to address the challenge of educating these students. A new approach to education is necessary in order to make an undergraduate education affordable for them. Scott (1995, Preface ix, p. 1, chapter 3 and 4) argues that mass education means more than moving from elite to mass education and also involves changes in the nature of society and the structure of the economy (post-industrial), shifts in intellectual culture (impact of post modernism) and in science and technology (new modes of knowledge production). The changing societal conditions or challenges include the following: changing patterns of diversity (cultural and social); the Information and Communication Technology (ICT) revolution which will reinvent or supplement the core technology of higher education; improvements in institutional and academic quality; contributions to economic productivity; post-secondary re-learning or lifelong learning; and globalization of scholarship (Peterson, Dill, 1997).

Ernst & Young (2012) conducted an industry-wide study of the most important forces influencing the higher education sector globally and locally and the implications for Australian universities. The study included interviews with more than 40 leaders from public and private universities, policy makers and representatives from the sector. Among the interviews with more than 20 universities, 15 interviews were conducted with Vice-Chancellors. According to them (Ernst & Young, 2012, p. 4)," the higher education sector is undergoing a fundamental transformation in terms of its role in society, mode of operation, and economic structure and value". A mere multiplication or expansion of the existing model of educational provision – "a broad based teaching and research institution, supported by a large asset base and a large, predominantly in-house back office" (Ernst & Young, 2012, p. 4), will not be sufficient, as new needs, demands and groups of potential 'customers' have to be addressed, including older students, working students, lifelong learning students and demands from companies. The growth of knowledge and the educational needs of society are beyond the control of the traditional universities and they could be in danger of having less impact in the future. In the knowledge society, many other providers are creating, maintaining and distributing knowledge. Ernst & Young (2012, p. 4) argue that, if universities want to keep or to increase their impact, they will have to transform their way of operating.

An entire industry for providing educational services to society is now competing in a market place for students, faculty, and public and private funding. Market forces and societal demands are reshaping the industry. The bargaining power of "customers" (students are learners with individual educational needs) and "suppliers" (other knowledge-based firms) has increased. Threats of new organisational entrants and substitute services exist. Innovation in core technology is taking place. The intensity of competition in the knowledge industry from telecommunications and corporate education produces rapid changes (Porter, 1980; Peterson, Dill, 1997, pp. 7- 8 and pp. 13-15).

The result of the current financial and economic crisis may be that the restructuring of the higher education sector will take place faster (Sapir, 2009), because globalisation and the increased focus on innovation policies by governments implies a demand for trained knowledge workers and for knowledge required for solving the problems caused by globalisation. Diversification in terms of institutional profiles would reflect the needs of a greater diversity of potential learners (van Vught, 2009, p 4; 2012, p. 8).

The increasing complexity of the needs and conditions in the education market influences expansion and diversification of HE. Diversity is considered as one of the more important factors associated with the positive performance of higher education systems (van Vught, 2009). In a complex international market, a range of HEIs (external diversity, differences between institutions) will co-exist in order to lead to a positive performance of higher education systems. New providers, with new organisational models, will arrive (as I mentioned above) and increase the diversity.

The following arguments are in favour of institutional diversity in higher education systems and are important in the context of higher education policy- making (Birnbaum, 1983, van Vught, 2009, pp. 4-5):

- Increased diversity makes it possible to address the needs of a variety of learners and to offer access to students with different educational backgrounds and with a variety of academic achievement.

- Diversity makes upward mobility possible and also downward mobility.

- Diversified systems will be more able to meet the needs of the labour market.

- Diverse systems ensure that the needs of different societal groups, with their own identity and political legitimacy, are met.

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- Diversity makes it possible to combine elite and mass education. Mass systems are able to serve a more heterogeneous student population and are willing to meet a wider range of demands from the labour market.

- Diversity would also improve the level of effectiveness of HEIs because institutional specialization will lead to a sharper focus on the specific mission.

- Diversity offers the opportunities to explore innovation through experimentation.

Guri-Rosenblit et al., 2007) observe that diversification is a common feature of widening access to HE in most countries. They stress the importance of flexibility within systems to enable students to progress between different levels and sectors within national contexts (jurisdictions) and between countries in order to achieve equality of opportunity.

In her study of institutional diversity in five European countries, Reichert (2009) makes some of the following conclusions:

- Institutional diversity should be considered within different national and institutional contexts because there are underlying values associated with the approach to diversity in these contexts.

- In Europe, institutional diversity is rather related to institutional profiles and not to the diversity of the student body, which is more an issue in the USA.

- Diversity of institutional profiles can be carried out through processes of vertical or horizontal differentiation. Vertical differentiation prioritises some types more highly than others, often on the basis of differences in quality standards. Horizontal differentiation tries to create a parity of esteem between different types or profiles.

- Diversity results from an a complex interplay of, sometimes, conflicting forces such as: "explicit national regulations, policies and funding instruments, rewards and incentives, quality assurance standards, career advancement practices, academic and stakeholder values, regional policies and support and international and scientific developments" (Reichert, 2009, p 155).

According to Boezerooij, van der Wende and Huisman (2007), universities faced with the challenges of a changing environment can base their strategy formation on three strategic choices: traditional, face to face, campus-based education (back-to-basics); flexible on-

campus delivery of education (stretching the mould); or anytime, anywhere education (the world campus).

The changing needs in the education market (section 1.1.1.), which challenge traditional ways of operating, and the changing relationship with the government (sections 1.1.2. and 1.1.3.), are not the only drivers for rejuvenation in the education sector. In section 1.2., I will have a closer look at another driver, namely the challenge of implementing lifelong learning strategies. New providers, private and for-profit, are entering the field of higher education and filling in the need for lifelong learning, as was recently pointed out by a report commissioned by Universities UK's Longer Term Strategy Group (2010).

1.1.2. Changing relationship with the government and reduced government support.

Most universities can no longer count on increasing government support - quite the contrary - as they need to pay more attention to the varying demands and interests of their different stakeholders.

In most cases, governments (in some places more than in others) are continuing their support of universities and, in return, are asking for more accountability. Higher education institutions are being asked to reflect more on cost, efficiency, productivity and effectiveness. Those reflections do not always take place within the context of a strategic process.

Some institutions are trying to diversify their income in order to be less dependent on governments. Rises in tuition fees, income from private sources, technology transfer to industry and other services, such as continuing education and professional development, are becoming means to increase the revenues. Some institutions increase their costs in answer to some challenges, but without increasing their revenues. Some are working on the expenditure side, but are cutting costs in an irresponsible way, by putting the burden on their personnel, often under external pressures[4]. Cost containment alone will not be sufficient. In the USA, the level of underfunding by the year 2015 has been estimated at $40 billion without action

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[4] See "The future of Higher Education. Written evidence from University and College Union. www.parliament.uk (November 5, 2011)

(Duderstadt, 2000). It is clear that new approaches are necessary (Symonds, 2003). Endowments suffer due to the recent financial crisis[5]; Government cuts continue[6].

At the conference organised by The European University Association's (EUA) in Prague, March 2009, the university association sent a strong message to political leaders (Prague Declaration, 2009). They urged them to combat the global economic and financial crisis through investment in higher education and research, because universities are crucial for the future of Europe and because they are the "motors" for economic recovery. They asked for a stimulus package for higher education and research through investments in young researchers, in unused potential (the lifelong learning aim), in upgrading of universities' facilities and in campus infrastructure. Among the requirements to be able to pursue excellence in their different missions, they mentioned the need for increasing and diversifying income. It is striking that, in demands for upgrading of facilities and infrastructure, EUA mentions the need for support for the ailing construction sector (Prague Declaration, 2009, p. 5) without mentioning IT-enabled opportunities for constructive change in their core activities (Fink, 1997, pp. 319-339, Graves et al., 1997, pp. 432-452). The current version of the EUA charter on lifelong learning (2008), while mentioning in the preamble among other things the rapid pace of technological change and while recognising the university's contribution to lifelong learning as a major benefit to individuals and society, does not mention e-learning strategies as a mean to reinvent their core activities of research and teaching.

While in some countries, universities are working on common strategies (e.g. mergers between universities and research institutes since 2007 in Denmark), for the sector as a whole, other countries do not move forward with regard to system changes. For example, the Dutch (The Netherlands) higher education system is a binary system with research universities on one side and mainly teaching institutions (HBOs) on the other side. Although profiling of universities has begun on both sides, research universities as well as teaching institutions, there currently is no discussion about the binary system, according to van Vught (2012). He observes that there appears to be unwillingness by the institutional leadership to discuss

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[5]   Endowments drop 23 % at nation's universities (about American universities). International Herald Tribune. January 2009

[6]   Sometimes by more than 20 % as mentioned in "Cuts in Italian education", Letters to the editor, International Herald Tribune. December 2008

differences between institutions with respect to mission, performance, reputation and quality (van Vught, 2012, p. 36). The reason for this could be that "HEIs find it difficult to select and define profiles that differ from the idealised profile of the research university" as van Vught (2012, p. 26) seems to suggest.

Other individual institutions are having problems with implementing their strategies and managing them properly towards implementation. In their recent book about leadership, Dotlich et al. (2014) argue that, with the demands of technology and the requirements for higher performance, leaders are confronted with complex dilemmas for which there are no easy solutions. Many higher education leaders would benefit from the development of their leadership qualities in order to be able to deal with contradictions and dilemmas in contemporary higher education such as demands for research, which leads to partnerships for economic benefits and the expectations from society with respect to interdisciplinary research which leads to solutions for global problems and demands from the labour market for knowledge workers with skills beyond academia.

1.1.3. Accountability and the relationship with the government

Traditional universities are complex social institutions. They live within a government context. Universities are regulated and (partly) financed by government; diplomas and programmes are officially recognized. With massification, and growing public interest in higher education, and with recognition of the economic impact of higher education, an increased politicisation of higher education has also taken place.

The relationship of universities with the government is changing towards more autonomy and more distance from the government. In several countries, university laws now provide autonomy to universities. Accountability towards the government is a counterpart of this autonomy, and currently causes tensions, which arise from this mix of public, private and voluntary management styles and their respective requirements. Quality assessment systems are set up. Performance indicators are used as a follow up instrument. In some countries, funding is directly linked to performance.

Universities have become "hybrid" organisations (Mouwen, 2000), which are confronted with features belonging to the public, private and the voluntary sector. In many systems, the public sector follows a model of government steering rather than direct control. The role of the state is being limited to designing broad options and defining general values and objectives such as issues of university access, the way of financing higher education, needs for knowledge and

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innovation and quality assurance. The state does not design the specific ways in which to attain these values. However, the extent of steering and the tools used may vary. Universities are encouraged to use methods from the private sector. This means they have to be managed by designing a strategy, which implies making strategic choices, in order to improve the efficiency of their organisation by using their resources more thoughtful. They also have to become more "client oriented" towards their students. This new approach has to be carried out without compromising their social goals, since they also belong to the voluntary sector.

Sporn (2003) points out that the market approach is considered the most important change in the European higher education sector. This can be understood as paying more attention to the needs of the market, but also as applying techniques which come from business and even looking for a more diverse income and for profits through technology transfer to business or by other means. It seems that Burton Clark's (1983, p. 143) triangle of coordination between government, market and academy is out of balance in many places and that market forces have become rather powerful, too much for some. Market forces and business perspectives are often looked upon with suspicion in most traditional university settings.

Former Harvard President (1971-1991), Derek Bok (2003 a, 2003 b, p. 81) has warned against the risk of profit-making activities for universities which could compromise their academic values. He argues that formal rules are required to protect the interests of weaker groups, when inequities and inequalities become more obvious once the search for profits increases throughout the university. If the university does not act, the government will have to protect legitimate interests. A university can not unilaterally decide to privatize research results, which should be globally shared or it will lose its scientists. The profit motive in for-profit, online and continuing education should not move the focus a way from providing the best learning experience (Bok, 2003).

Besides the broad options and the general values and objectives put forward by the national state, traditional universities also have to deal with supranational governments and their policies and requirements. A good example is the European Union and can be illustrated in the requirements of HEIs to adapt to the Bologna system which is creating a European Higher Education area, including, as a first step, new degree structures. More details can be found in appendix 2.

The Bologna process engages higher education as a prime vehicle in the construction of Europe through the establishment of the European Higher Education Area (EHEA) and

subsequently through the European Research Area (ERA) (Neave, 2008). The European Higher Education Area, which was conceived with the Bologna declaration (1999) has been functioning since March 2010. It was launched during the Budapest-Vienna Ministerial Conference (Budapest-Vienna Declaration of March 2010). During the decade 2010-2020, a consolidation of the EHEA will take place.

The Bologna declaration 1999 consists of six principles with regard to the adoption of understandable and comparable degrees, the adoption of two main cycles: undergraduate and graduate (later on the doctoral level was added), the establishment of a European Credit Transfer System (ECTS), the promotion of mobility by overcoming legal and administrative obstacles, the promotion of European cooperation in quality assurance, and the promotion of a European Dimension in higher education. Three more principles were added at the 2001 Ministerial Meeting in Prague, among them lifelong learning.

The Bologna Follow-up Group (BFUG), which received a mandate at the London ministerial meeting in 2007 to come up with some proposals for a strategy beyond 2010 includes, among the new challenges after 2010, the design of new higher education provision compatible with the ICT area by using ICT for teaching and learning, and the mainstreaming of lifelong learning to respond to the challenges posed by an ageing population.

During the Bologna ministerial meetings in Leuven (April 2009), the ministers of higher education of the 46 European countries involved in the Bologna reforms set the following priorities: a mobility percentage of 20% in 2020 for study or for training; widening participation; making lifelong learning an integral part of education systems; and fostering employability. In an informal meeting in Prague on March 22-23, 2009, the education ministers emphasised the promotion of lifelong learning as one of the key points to tackle the financial and economic crisis, besides using the existing resources and maintaining or increasing investments in education and training.

The relationship between the university and the government needs to be reoriented (van Bijsterveld, 2003) towards more cooperation. The university, the market and the government have become actors in the knowledge society. The capacity to act in an independent way (real autonomy) plays a role in the governance of universities and will determine how to deal with the rules set out by the government in a differentiated way in order to come forward with a specific profile as an HEI.

Today, universities, certainly publicly funded ones, have no real autonomy (in the general, not legal, meaning) in the sense that they are free to do as they like without being accountable to anyone. Accountability can be defined as being externally accountable to the government (the political concept) and the external stakeholders (including students and their families, employers and taxpayers). In order to achieve efficiency and effectiveness, governments are requiring universities to establish internal and external quality systems. For example, during the last 20 years, significant national developments have taken place in teaching and research quality systems (De Jonghe, Vloeberghs, 2001).

Accountability requirements are often felt by the university administrators and faculty as a threat to the autonomy of universities. Until recently, universities could behave as if they were monopolists, which are supply driven or provider centred and often, at least at the national level, protected from the open competition of the free market. They had the sole right to supply and control certain educational services.

Nowadays, governments are focusing more and more on the outcomes of education. They are interested in what students learn that will enable them to find work and to contribute to development and innovation in society. Educational services for a knowledge driven society, rather than specialized scholarship, have become a priority, as shown by the Bologna process in Europe.

While the research university still has an important role in knowledge production and distribution, it is now seen as one of many players in the higher education industry (Duderstadt, 2000). Under pressure from the Graz declaration (European University Association, July 2003), the European ministers reasserted during their conference in Berlin (19 September 2003) the need for a closer link between the European Higher Education Area and the European Research Area[7]. Since 2003, many developments have taken place in order to create this link.

Also, in the field of research, governments are putting forward specific requirements such as, collaboration with other universities, the public sharing of results or reporting on the research

[7] See http://www.eua.be /eua-work-and-policy-area/building-the-european-higher-education-area : Consolidation the European Higher Education Area: "EUA is pushing for a 'rapprochement' of the European Higher Education Area and the European Research Area". (May 15, 2011)

process, sometimes as a condition to funding. The increased dependence on outside, private funding obviously creates a further set of requirements and expectations motivated by profit.

Universities wanting to carry out research have an increasingly hard time finding sufficient funding. In some countries, funding is directly related to performance indicators. Also, different strategic groups are emerging, such as those wanting to continue their excellent research and those entering the research domain. Research driven universities may introduce research performance indicators in order to be accountable towards authorities; efficiency, monitoring and standards become important.

Some associations of research universities seem determined to become a new kind of elite group. For instance, The European League of Universities (LERU) shares the same values with regard to high quality teaching and internationally competitive research. The universities of the LERU network are exchanging best practices about activities of research-intensive universities, through mutual exchange of experiences. They are also trying to influence European research policy. Networking, alliances or mergers and acquisition, are well-known mechanisms that have appeared in many other industries (often mature or industries under pressure), mostly as defensive moves to protect traditional operating models and defer necessary internal changes or reorganisation.

1.2. The challenge of implementing lifelong learning strategies

In section 1.1., I argued that the knowledge society and the lifelong learning requirement make it important for universities to re-invent themselves as key players in the broader knowledge networks. How do universities need to change to better serve the needs of a knowledge society for lifelong learning?

Universities are complex institutions faced with multiple frameworks of understanding, of action and of self-identity (Barnett, 1999). Plurality of missions is one example of this complexity. Universities are expected to participate in the production of new knowledge that can be used to solve the problems of the world. They play a role in regional development and in innovation processes. They are asked to educate the knowledge workers of the future. They have to stimulate social inclusion. The current emphasis on lifelong learning is broadening the mission and adding to this complexity. Goddard and Vallence (2014) discuss this changing environment and highlight the importance for universities of being aware not only of their economic role in society, but also of their societal role.

The implementation of lifelong learning strategies is one of the new challenges and tasks which European contemporary Higher Education Institutions are confronting. They are faced with the challenge to come up with effective and efficient strategies to organise lifelong learning (OECD, 2008). Challenges include inequalities in access and participation, the diversity of learning paths, the educational provision by HEIs and the future role of the academic profession and the risk for social marginalisation of people with a low education level (OECD, 2008). The EUA states in its Charter on lifelong learning (2008) that its member universities have to better define the overarching concepts and practices, and to clarify more precisely the contribution that can be made by creating a culture in European universities which is willing to be more inclusive.

The current demands of the fast changing labour market require competences, in respect of knowledge, skills and attitudes (Hernandez-March, Martin del Peso, Leguey, 2009). Increasingly, universities are trying to develop these competences by interdisciplinary teaching and specific skill development (Georgios, 2011). For example, Golding (2009) describes how interdisciplinary teaching and learning is integrated in the curriculum at the University of Melbourne on the basis that complex problems, phenomena and concepts can not be understood or resolved unless they are approached from an interdisciplinary angle. He also argues that disciplinary depth is necessary together with interdisciplinary translation and synthesis.

Every discipline should make its own analysis - based on its strengths and weaknesses - of which competences should be developed for employability. Many differences and contradictions exist between disciplines and institutions. Some disciplines are better prepared for organising lifelong learning because they have a tradition of keeping their alumni updated. Some institutions have specific programmes for updating their alumni. For instance, Business Schools have their own tradition of working with company executives and currently have to compete with companies that set up their own company programmes for their executives, often directed by university professors. Business Schools are also reflecting on the role of ICT in the development of their institutional strategies, including for lifelong learning (Bradshaw, 2010).

Contemporary universities may have difficulties in finding an adequate response to the lifelong learning needs, because they are trying to organise it within the contours of an organisational model, which has not been restructured for lifelong learning purposes. Most

academics are prepared for teaching "full-time, fresh out-of-secondary school" students and somewhat older, graduate and PhD students. Some are familiar with campus teaching for the so-called part-time or full-time "working student". However, providing for the needs of lifelong learning is made somewhat more difficult since a more diverse population is involved.

In order to craft a strategy for lifelong learning many factors need to be taken into account (Smidt, Sursock, 2011). Often, it is not clear who this more diverse population of potential lifelong learning students is. Higher education institutions do not know how to identify them and how to reach out to them. They are trying to find out which strategy should be followed to reach potential lifelong learners with different backgrounds, coming from diverse origins, all with their own specific education, professional training and experience. Moreover, strategies for one country are not always applicable in another country.

A paradigm shift, a radically different way of thinking, may be necessary to effectively organise for lifelong learning. Then, e-learning strategies could be a solution if digital literacy becomes more widespread. Indeed, many contemporary Higher Education Institutions already integrate e-learning strategies for campus students in their teaching and learning methodology.

1.3. Issues warranting research

My research is intended to offer an analysis of a case study of an institution, which is integrating ICT into its mission, by discussing the issues arising, the changes required and the solutions put forward. Moreover, by adopting a longitudinal approach, another objective was to examine the impact of such changes over a longer perspective.

Therefore, I examined an institution which is gradually building its own organisational model as a university. In previous work (De Jonghe, 2003 a and b), I studied the strategy of the Universidad Oberta de Catalunya (UOC) as it was formulated and implemented over a number of years. UOC is a virtual university, which started from scratch in 1995, based on a specific pedagogical model, with an emphasis on the client relationship with the student and with a clear technological model based on the most advanced technological means of communication such as social tools, multimedia content, advanced synchronous and asynchronous communication, 3D virtual environments and access to teaching through mobile devices. Staff at UOC studied the new demands for educational provision. The

University offers degree programmes (three cycles) and lifelong learning courses. Despite the focus on delivering e-learning courses, however, UOC also choose to carry out other aspects of a university mission, such as research and outreach to society.

The challenge represented by the implementation of UOC's pedagogical model based on technology alongside the implementation of its research model, prompted my curiosity in the subject of this study. After my initial investigation in 2003, I looked at further developments in 2008 and 2009 following the appointment of a new Rector in 2006 and following the adaptation of Catalonia and Spain to the requirements of the Bologna process.

One objective of this research is to examine whether a distinctive, new institution can retain its innovative position or whether, over time, it takes on the norms of established HEIs (normative isomorphism). This is one of the reasons why a longitudinal approach was pursued. I wanted to analyze if UOC, as a recent member of the European University Association, was going to integrate into mainstream higher education and if it would continue to grow. Another objective will be to identify what more traditional universities with mediaeval roots and structures can learn from this venture.

ICT implementation leading to smarter buildings and more virtual working can create great environmental benefits. For UOC, environmental opportunities in ICT are in synergy with other strategic drivers in higher education towards more effective ICT use (James, Hopkinson, 2009, p 83). There is a need for looking in more detail at institutions, such as UOC, which are attempting to realize the full potential of ICT. The community of UOC is based on the most advanced technological means of communication and combines software and digital telecommunication networks. Resources and space are managed and allocated in a studied way in order to contribute to sustainability. Mitchell (2007) compares UOC with "intelligent cities", which are combining digital communication networks, software, sensors and identifiers (e.g. the city car can be folded and can be loaded everywhere in the city) and contribute to sustainability.

I want to examine why and how newcomers in the educational market are exploiting ICT in a better way than traditional universities, many of whom have made important investments in ICT, but are not dramatically changing their organizational model and not exploiting fully their ICT investments. More research is needed to find out why some institutions do not invest in the new information and communication technologies and why, in some institutions, ICT investments are not exploited in order to restructure the academia by redesigning the

academic work and functions. My premise is that such investments could, in the end, enable institutions to deliver their educational services in the age of lifelong learning in a more efficient and effective way.

My study intended to address the gap in knowledge which exists between the knowledge about technology (ICT) as a substitute or a complement to deliver courses, and the way ICT can really transform the business model of universities by changing the way of working and organisation in universities. Most academic literature seems to be reasoning "within the old frame works" or "inside the box" as far as ICT utilisation is concerned. ICT has the potential to change the way HEIs are functioning. If ICT is to have an impact on the organisational model of higher education institutions, challenges have to be overcome. Tensions, which are related to the core values in higher education, are preventing HEIs to make a clear choice and use ICT for the redesign of one of the core tasks, teaching and learning of many HEIs, more specifically, a choice for integrated ICT learning, which can eventually lead to organisational change.

In this study, I examine a newcomer with a new organisational model for higher education, "the virtual university", aspiring to be a "real university". I am analyzing:

- Is the strategy of this "virtual university" really different from other universities with regard to the core values of other HEIs, especially in respect of research and teaching and learning based around a community on a physical campus?

- How does this university address increasing needs and pressures about different aspects of its mission, research, teaching and learning and services to society?

- What lessons can be learned from the change processes followed?

In this study, I will also look at ways this model can inspire or provide a model for traditional universities. Traditional universities are confronted with pressures from the knowledge society with regard to their research and teaching mission. ICT could play a greater role in the restructuring of their core processes. They could be "winners" if they see the implications for their own strategy and organisational model.

In particular:

- How can traditional universities adapt (or overtake the newcomer) in order to enable the academics to deal with multiple tasks caused by the complex missions of the institutions they belong to?

These questions will be examined by looking in detail at my case study university over a period of six years, offering a distinctive longitudinal study of change in higher education.

2. Culture and values in contemporary universities, academia under pressure

The traditional academic values of HEIs are under pressure from several influences. In the previous chapter, I argued that the changing relationship with the government (less financial support, more accountability) and the implementation of lifelong learning strategies may require new ways of organising the tasks of the university, based on new organisational models taking advantage of digital communication and learning technologies (sections 1.1. and 1.2.). I suspect that the core values and underlying cultures of traditional higher education institutions are retarding this change. There is a distinction between values and culture in an organisation. Organisational values consist of principles, which guide decisions and actions of the members of the organisation. Shared values between organisational members are essential and beneficial to organisational culture (sections 2.1. and 2.2). The existence of shared values turns out to have an impact on continuous success of an organisation. As an alternative to bureaucratic control, culture can be used to exert control in an organisation (based on Grant, 2010).

Academic values consist of a set of values that comprise commitments to different groups (e.g. disciplinary affiliation, students) and to ethical norms (e.g. integrity in academic, social and professional activities). Academics within HEIs care about their traditional core values: a focus on independent scholarship, including research. They perform their teaching, learning and research within the context of academic freedom based on intellectual freedom and the idea of autonomy. Disciplines developed in the late nineteenth and early twentieth Century became important for the academic organisation. They determine the way research and teaching takes place (Kreber, 2009). A traditional organisation protects academic prerogatives such as a professor-centred view and a focus on research. In faculty-centred HEIs, faculty members determine what to teach, whom to teach, how to teach and where and when to teach (Duderstadt, 2000, p. 88).

However, the needs of the researchers and the needs of the students are not necessarily interwoven. Issues related to research and teaching in traditional higher education often cause much debate because of their conflicting aims and goals. The perceived value of research causes tensions with other forces in the organisation wanting to transform the organisation into a modern, organisation with a focus on learning in which the relationship with the student

is central. At regional, national and institutional level infrastructures have been put in place to support teaching.

In one of his books, Barnett (2003) examines the different perspectives such as competition, entrepreneurialism, quality, managerialism, management of research, management of teaching and academic community, that have entered the world of the traditional university. He argues that each of these perspectives have tended to be pursued as separate ideologies rather than merely as particular facets of a complex business. He points out that research has now also emerged as an ideology and has found its counter in the formation of teaching as an ideology. I agree that there is a problem because research and teaching are becoming more differentiated (than traditionally) due to increasing sophistication of each and the required skill set to be effective in the activities of research and teaching. I wonder to what extent effective research and teaching can be separable activities. Assuming there is a dichotomy between research and teaching, I need to explore issues which clarify the extent of any 'tension' between teaching and research.

Research is a complex concept with many functions. The definition of research (and the role of subject disciplines in it) is central to this whole discussion with regard to the conflict between research and teaching. The following list of different types of research demonstrates that different perspectives exist with regard to research and its relationship with teaching:

- research led teaching and learning (e.g. teaching , research methods, and getting students to learn by doing their own research as in project work or assignments, readings etc.),

- research informed teaching (presenting findings from research and discussing its implications), and

- research that has yet to be incorporated in any curricula (if it ever is).

Academic organizations based on the disciplines have their own practices and procedures based on specific concepts and traditions, which define the way research and teaching takes place. Menand (2010, p. 97) observes that "the creation and institutionalisation of separate and effectively autonomous departments of research, is an episode (emergence of disciplines with the modern research university between 1870 and 1915) in the history of the division of labour". Currently, academics face pressures coming from developments within their disciplines (section 2.3.1.). At the same time, they face the challenge of responding to the

societal demands for economic benefits and commercial interests. Some research is no longer carried out in order to inform teaching but to serve directly the needs of the knowledge economy and the corporate sector (section 2.3.2.). According to Barnett (2003, p. 147), an alliance of forces makes research world wide the dominant project in universities. For the corporate sector, the intellectual resources of the university can be used in its research and development activities. For the state, research is the key to improving the national position within the knowledge economy. Academics experience the consequences from research performance measurement (section 2.3.3.). For academics, research and published research in particular, becomes a central concern because this activity is also rewarded in funding and in the promotion system. Academic staff often regards visible research activity as crucial for peer esteem. For some researchers, teaching often comes in second place in both activity and esteem.

Yet, the focus on teaching and on the learning of the student has become increasingly important for society (2.4.). This focus reflects the needs for lifelong learning in the knowledge society (2.4.1. and the previous section 1.2.). The consequences of the changing student concept (2.4.2.), the requirements of the labour market (2.4.3.), the emphasis on the relationship with the student and the development of a student - centred approach add to the pressures on academia (2.4.4). I section 1.2., I highlighted the new challenges and tasks universities are facing when implementing lifelong learning strategies. Academics experience the transition from teaching students to making students learn (2.4.5.).

Inside and outside forces cause tensions at universities between groups with different perspectives on research and teaching, which have significant implications. In particular, they can influence and may even paralyse the strategy formulation and implementation processes at universities. Tensions arising from these different pressures lead to specific ways of distributing power, and influence over resources and educational initiatives. Rothman et al. (2011, pp. 1, 8) argue that "competing demands and incompatible visions of the university and its core mission are the cause of a still divided academy". Faculty members, students and administrators have their own values and assumptions and make it sometimes difficult to have "a productive discussion and reflection on the mission and the goals of the university" (Rothman et al., 2011, p. 195). The title of Rothman et al's book "The still divided academy" is a reference to a book by Ladd and Lipset (1975) about the "divided academy". Ladd and Lipset (1975) argue that the campus protests and student activism of the 1960s gave rise to division and tension between various groups of faculty members on campus. Several faculty

members experienced the student movement as a threat to the authority of the faculty and to academic freedom. During that period of time, questions and debate arose about the main purpose of the university (Rothman et al., 2011, p. 4).

It is important to look in depth at the internal and external influences on research and teaching and the pressures they provoke in order to understand what the extent is of the conflict between research and teaching (see sections 2.3. and 2.4).

2.1.   Pressures and resistance to change

New behaviours, attitudes and approaches need to become part of the shared values of the organisation. Organisational members need to become aware that the new approaches will lead to improved performance, otherwise the new behaviour will not be maintained once the pressure for change decreases (Kotter, 1995). The Bologna process wants to make the educational systems more comparable, compatible and coherent in Europe (section 1.1.3.). A diversity of national systems still exists in Europe, together with diversity within the national systems (section 1.1.1.). The Bologna process requires universities to facilitate the recognition of degrees and academic qualifications. Mobility and networking between universities is being promoted. Universities are asked to adopt student-centred teaching methods and to implement lifelong learning strategies. Most European universities responded to the Bologna requirements and adopted new approaches to the above mentioned issues (appendix 2).

DiMaggio and Powell (1983) argue that once organisations in the same line of business are seen as belonging to the same sector, they become more similar to one another while trying to change their organisation. They call this process "institutional isomorphism" and make a distinction between three mechanisms through which institutional isomorphic change takes place. Coercive isomorphism is responding to political influence and the problem of legitimacy. Mimetic isomorphism, the imitation of another organization's structure, is seen as a standard answer to uncertainty and normative isomorphism is caused by pressures from the professions. Differentiation in organisational forms and strategies can still be a problem among universities that are influenced by isomorphic processes. Forces, such as the state, the competition, and the professions, have a tendency to make institutions more like one another (DiMaggio, Powell, 1983; Huisman, 1995; Stensaker, Dahl Norgard, 2001).

Slaughter and Leslie (1997) suggest that external and internal steering and governance of higher education institutions changes the essential characteristics of higher education institutions and can affect their differentiation. However, others, "the heartland", (Clark, 1998), will only accept institutional reforms if they fit with the values and the normative expectations of traditional HEIs.

National policies generally require an increase of participation rates in higher education (Ritzen, 2012). Diversity in educational provision is necessary if participation needs to be increased. In order to increase institutional diversity it is increasingly necessary to focus on strategic profiles of HEIs, which are describing what type of institution a given HEI wants to be (van Vught, 2012) (see also section 1.1.1.).

Universities are faced with increasing expectations and challenges, which lead to mission overload. Although defining a specific institutional profile requires choosing specific activities, clear strategic choices are often not made and are even less successfully implemented (van Vught, 2012). Often only incremental changes take place, only those that cannot be avoided or those that are forced onto HEIs from the outside by changes in regulation or market forces (changes by coercive, mimetic and normative isomorphism). Even if the vision and the strategy are clear, change remains difficult.

Slow academic decision making, based on collegiality and rigid academic structures, not adapted to a turbulent external environment, make it difficult to take decisions. Hanna (1998) has argued that the new challenges facing universities demand experimentation with new structures, form and process. In organisations, the knowledge of what needs to be done often does not result in action or behaviour consistent with that knowledge. Pfeffer and Sutton (2000) call this phenomenon the knowing-doing gap. This gap is rather peculiar in some universities, where managerial and educational knowledge, created by academics in the field, exists. In order to transfer this knowledge in to action plans, analysis and meetings must be used to realise changes. Fear for change and destructive internal competition should be overcome. What matters should be measured and therefore the leadership should understand the work that is being done in the university.

The UK (Deem, 1998, 2001), the Netherlands and many others, most recently also Japan (Arimoto, 2009), have adopted a more managerial model of running a university as a business organization, but internal resistance to so called methods from business still exists. Universities in Flanders (Belgium) set up many new initiatives for technology transfer,

teaching and research. The co-operative structures set up between universities and university colleges (so called "associations") and consequently, the integration of parts of the "associations" in the university, leads to organisational restructuring but does not affect the typical form and processes used to carry out the core tasks common in HEIs. The university mission (teaching, research and transfer to society) is still expanding and may be endangering the implementation of one of the core tasks of the university, such as teaching because more time and money are spent on research and on transfer of knowledge to society than on improving teaching and learning for the students (Cools, 2012; High level group on the modernisation of higher education, 2013). Although variations in the capacity for change of HEIs exist, change often takes place at the bottom, in new initiatives or structures, by way of, for example, separate research and development centres, leaving the core of the traditional university largely untouched. This has been exemplified in the set-up and growth of Leuven Research and Development, a non-profit organisation to manage and administer spin-offs as well as research and consulting contracts of the KULeuven (Belgium), with the outside world (Debackere, De Bondt, 2002, De Jonghe, 2000). Other non-profit research centres have been set up at KULeuven (technically completely outside the university) as was the case of IMEC in the field of micro-electronics (in cooperation with the regional governmFent). Only recently some proposals have been put forward for a new governance system at this University.

It could be that the academic subcultures based on different disciplines (Becher, Trowler, 2001) do not welcome change at the institutional level. McNay (1995) observes that there are four cultural types: collegium, bureaucracy, enterprise and corporation. The collegium type is based on informal networks and decision areas and it has a loose institutional policy definition. The bureaucratic type has strong regulation supported by committees or administrative rules. The policy is also rather loose and the regulatory environment can be "contaminated by political authority" (McNay, 1995, p. 107). The enterprise type has a well-defined policy frame work and sees the students as clients. The market is a strong focus. The corporate type has a tight policy definition and top-down directives implemented by senior managers. McNay (1995) observes that these different cultural models can exist within one university. They often consist of a mixture of typical collegial and professional (bureaucratic) academic culture, confronted with a touch of corporate culture and some drive for entrepreneurial initiatives. McNay (1995) bases his observations of the culture of universities on two particular dimensions: the form and intensity of control and the focus on policy and

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strategy. These dimensions are important; however the regional culture and the government policy on education also play an important role in European higher education systems. Feola (2003) observes that external challenges and constraints lead to mixed models. She argues that top down strategic decisions taken with implications for the whole academic community, are likely to meet with resistance in traditional university cultures used to incremental changes. Different cultural types within the university often results in tension and resistance to change at the disciplinary levels, because every discipline has its own cultural characteristics (Becher, Trowler, 2001).

Academics and members of the High Level Group on the Modernisation of Higher Education, perceive that individual performance in research rather than in teaching and learning, is still highly valued and rewarded (The Higher Education Academy, 2009, High Level Group on the Modernisation of Higher Education, 2013). Individual work is still the basis for promotion and tenure in HEIs. Pati et al. (2013) observe how outdated models for promotion and tenure do not reward collaboration, when describing an innovative project to bring about change in the culture of promotion and tenure in academic medicine at Pennsylvania's Perelman School of Medicine. In the next chapters, I will indicate that work in groups and cooperative achievement is often necessary to improve teaching and learning. This requirement seems to be an obstacle for academics used to be rewarded for their individual research performance.

 In many societies, masculine traits (authority, assertiveness, performance and success) rather than female characteristics (personal relationships, quality of life, services, welfare) are still praised (Hofstede, 1992). Hofstede (1992, 2001) bases these traits on his analysis of how a society stresses 'achievement' of 'nurturing' with regard to several societal aspects such as social norms, politics and economics, religion, work and family and school. Societies and their organisations tend to display more masculine or more female traits depending on their focus on 'achievement' or 'nurturing'. It could be that university culture varies from country to country depending on where the country stands with regard to Hofstede's dimensions (1992, 2001). However, studies about universities show that women often complain about masculine culture at universities, even among administrative staff, as indicated by Wallace and Marchant (2011) in their study of female middle managers in Australian universities where 65 per cent of the staff are women not performing academic work. A group of female scholars proposed a 'friendly and supportive' peer review approach at the Critical Management studies conference in Manchester on July 10-12, 2013 as an alternative to the

masculine traits of traditional academic discourse (University of Leicester Press Office, 2013).

Silver (2003) states that universities do not have an organisational culture and that existing definitions of organisational culture do not work. He emphasizes the issues of conflict and lack of coherence due to the extreme fragmentation of the university and the existence of rival subcultures. He bases his observations on a study about the perceptions of academic staff, including innovators in teaching and learning, of the existence of a culture in their organisation. In his view the difficulty in using the concept of organisational culture is caused by the strength of the academic's commitment to his discipline. Personal interest, career and professional identity are all linked to the discipline to which the academic belongs.

2.2. A cultural heritage? Professor-centred and a focus on scholarship including research

A professor-centred approach is arguably deep rooted in long held traditions, although there have been variations in organisational emphasis on the role of the professor in various higher education systems depending on the emphasis on teaching or on research. Going back in history, with the aim of improving the mutual understanding of European higher education systems and explaining the role of educator, teacher or researcher in the different systems, Gellert (1999) identifies three models of university education, the consequences of which play an important role in the relationship between teaching and research. In the 19th century and in the 20th century, the three models mentioned hereafter became apparent and more definitive. In England, a model which stimulated the personal development of the student existed for more than 300 years, an ideal of liberal education associated in the past with Cardinal Newman and the Oxford movement. The 19th-century movement situated at the University of Oxford, "sought the renewal of Roman Catholic thought and practice within the Church of England" (Britannica Online Encyclopedia, 2012). Some of the followers, among them Cardinal Newman, converted to Roman Catholicism. Cardinal Newman was also an educator. In "The idea of a university" (Newman, 1907), he explains his philosophy of education. In this personal development model there is a focus on character building and personality development of the student through a specific communal lifestyle and extra-curricular activities, and not only through studying. It is interesting to see that, already in this model, the need for activities (on campus) other than studying was recognized.

The "Humboldtian model" or "the research model", as an institutional model, emerged in Germany in the nineteenth century. Solution of practical problems through scientific means took place earlier in Germany as well as in the UK (Etzkowitz, Leydesdorff, 2000, p. 115-116). The Humboldtian model was a consequence of the late eighteenth century philosophy in which learning and scholarly enquiry formed a unity. It stood for gaining empirical knowledge and tried to use it directly for teaching purposes. The focus was on the academic discipline seen as knowledge in a particular field.

The third model in Europe was the Napoleonic one, which was the French model. It is called the "professional training model" because most emphasis is placed on learning for the professions. The "Grandes Ecoles" prepared the elite for the professions. Research was to be carried out mostly outside the universities in special institutions whilst universities took care of teaching activities.

The Humboldtian system stood for the unity of research and education/teaching, an education controlled by research and higher learning, and by the protection of science as an important task of the central state or the government. This approach represented one of the most successful reforms in the history of higher education because it became a model for universities for the next 110 years and boosted academic creativity and productivity in research (Nybom, 2003, p. 21). The Humboldtian University reform, undertaken by Wilhelm von Humboldt, Under Secretary of State in Prussia, was part of the administrative reforms in Prussia after the Napoleonic wars. It occurred after a difficult period (the defeat of Prussia in the Napoleonic wars) during which Prussia had lost all its universities, except for Konigsberg and Frankfurt, and 22 (50%) of the universities in the German-speaking world were closed (Nybom, 2003). A consequence of the reform was a demand for almost unlimited autonomy. On the one hand, it provoked the expansion of the idea of academic excellence, academics focusing on their disciplinary research, but on the other hand it led to the conviction among academics that they had no societal or moral responsibility outside their 'autonomous academic space' (Nybom, 2003, p. 20). Later, this led to some difficulties in Germany such as professors, distant from the world, teaching what they like and hardly tutoring their students. Nybom (2003, p. 20) suggests that the unique German character of the university (apolitical, "ivory tower") was one reason for German academics to accept easily the political events after 1890 (von Bismarck's dismissal), 1914 (First World War), 1933 (Hitler, Chancellor) and 1945 (Second World War). A fundamental reform of the university system could not take place after World War II because of the belief in the Humboldtian ideals. After the

catastrophe of the Third Reich, instead of a new start of the German University System, a resurrection of the Humboldt University took place (Nybom, 2003, p. 25). In the 1960's and 70's German and European academics maintained that Humboldtian ideals could be secured if "the State" guaranteed an adequate level of funding and support. This conviction compromised serious efforts to reorganize German universities (Nybom, 2003, p. 26). Only after the German excellence initiative was launched in 2005 reforms are beginning to take off. This initiative aims to promote top-level research. It also wants to improve the quality of German universities and research institutions in order to make them more internationally competitive.

In most Mediterranean and Eastern European countries, the French model was followed. Other European countries followed the German model. The USA (at undergraduate level) and many other English-speaking countries were strongly influenced by the English model. In the USA, the mission of "service to society" became important in order to support the agricultural and mechanical revolution and train for the skills needed in these industries (the mission of the land-grant and urban colleges). By the late 19th century, following the Germanic model, research became important in some places. The USA retained the diversity in its higher education institutions by having besides research universities, also land-grant and urban colleges and two year (community colleges) and liberal arts colleges, where teaching is the main mission (Boyer, 1990).

Barnett (2003, p. 146) states that "Universities in the UK were not required to demonstrate their effectiveness in either research or teaching until after the Second World War". Research and teaching co-existed and were sustaining each other (Barnett, 2003). After nearly 1,000 years, the university remains the institution where those activities were pursued near each other and also linked to each other; each offered the other added value (Barnett, 2003, p. 149). Already, before the organisation of systematic research, universities took the responsibility for nurturing new understandings through reflections on texts, more specifically reflections on texts of the Greek philosophers (Barnett, 2003, p. 149). Scholarship and teaching were mutually reinforcing each other: teaching was possible through scholarship, and scholarship improved through teaching (Barnett, 2003, p. 149).

Rivalry between teaching and research, which have become separate parts of the mission of the university, is a rather new phenomenon caused by the contemporary conditions of the university where research "has become the dominant project in university life around the

world" (Barnett, 2003, p. 147). Barnett points out that, for several decades, we have been confronted with the 'massification' of higher education and the emergence of the knowledge society. The latter encourages knowledge production and the research function of the university. The former encourages the teaching (or social) function of the university (Barnett, 2003). These two priorities have become separate functions, with entirely different structures (e.g. different central departments in universities, different governmental ministries), forces (e.g. employers, the corporate sector) and interests (e.g. need for competences, skills, need for new knowledge and innovation). Tensions arise between the two functions.

Science has become an "ideology", which is determined to pursue its view of the world and to use power to realize its ambitions (Feyerabend, 1982; Barnett, 2003, p. 150). Globalized science now exists separately from its sponsoring nations. Connections between universities and the corporate world (e.g. the pharmaceutical industry) are developing. Barnett suggests that scientific articles, "saturated with economic and corporate interest" can no longer be trusted (Barnett, 2003, p. 150).Teaching has also become an "ideology". It has become student-centred and is moving to "student-as-learner". The role of the professor is changing. The teacher becomes a facilitator in the learning process of the student (Barnett, 2003, p. 150). Learning outcomes become more important than the pedagogical process (Barnett, 2003, p. 151). For Barnett (2003) those developments show that research and teaching are becoming separate activities. For him teaching used to be a force for unity in the university but by becoming an "ideology" it is adding to the fragmentation of the university.

The tension between teaching and research really emerged in the second half of the 20th century, with the massification of higher education and the specialization of sciences, which became increasingly useful for some parts of society. Duderstadt (2000, p. 121) argues that in the 20 century, the success of sciences such as physics and chemistry, caused the implicit assumption that simple principles could explain even the most complex phenomena. The scientific method was trying to reduce complex phenomenon to simple rules. As a consequence of the reductionist approach to scholarship and teaching, specialization increased (Duderstadt, 2000, p. 121). The specialization did have consequences for research as well as for teaching and learning:

- Specialized research produces graduates with a rather narrow view of the world. A consequence of this specialisation is that solutions for complex societal problems are not easily found. Economic competitiveness often requires another type of

research. Academics, in several fields of study, are confronted with societal demands for economic and social benefits. In order to address these needs, academics are needed, who can take on interdisciplinary translation and synthesis necessary to approach complex problems (Golding, 2009; Duderstadt, 2000, p. 121; Menand, 2010, pp. 93-125).

- A particular kind of specialized scholarship, science focused on specialization within one discipline, is being criticized because the learning needs of society are being neglected. When explaining his vision on general education, Menand (2010, p. 56) criticizes the meaning that the study of any discipline will develop the mind and allow graduates to solve problems and issues encountered after college. Menand (2010, p. 56) argues that solutions for problems and issues in the society can be found if taking into account "frictions of a kind deliberately bracketed in the academy". There is an increasing demand for student-centred teaching, which includes the concept of the student, responsible for his own learning and new concepts of pedagogy such as interactive and collaborative learning. Educational opportunities should be affordable for all citizens throughout live (Duderstadt, 2000, p. 329).

Menand (2010, pp. 73-74) mentions four post second world war developments in higher education; a technological and geopolitical strategy, ("to be better than the communists"), a social policy in favour of meritocracy, the belief in general education in undergraduate teaching, and the dominance of the scientific model in academic research. The scientific model in academic research became dominant, also in the social sciences and the humanities (Menand, 2010, p. 74). Menand (2010, pp. 60-92) argues that "the idea that academics, particularly in the social sciences, could provide the state with neutral research results on which pragmatic public policies could be based was an animating idea in the 1950s university". He claims that "for the first time in history, research rather than teaching or service, defined the model for the professor" (Menand, 2010, p. 76).

Based on the above, I argue that the importance of research is only partly based on a cultural heritage and that the emphasis on research became important after the Second World War. This emphasis provoked the pressures for research performance within the disciplines, helped by specialisation within the disciplines and societal demands for economic benefits.

2.3. Current pressures facing academics

Currently, several pressures are having an impact on academics in the different disciplines. The scope and effects of these pressures provoke tensions between different forces in the organisation, bargaining for influence over resources for research projects and for educational initiatives.

2.3.1. Developments within the disciplines

The idea that academics are constructing knowledge according to the modes of interaction in their respective disciplines still dominates in the organisation of the university. However, different views on the nature and the developments of various disciplines cause tensions within academia. The view on academic disciplines has been developing over time and the strength of outside influences has been influencing this view as illustrated in the next paragraphs.

In the first edition of his book "Academic tribes and territories," Becher (1989) studied the academic knowledge and the cultures of 12 different academic disciplines based on interviews with academics in the USA and in the UK. He looked at the nature of the disciplines, their common cultures, the internal structures and the modes of interaction of disciplinary "tribes" and their constituent networks. His central thesis was that the way specific groups of academics organise their professional lives is closely related to the intellectual work they are carrying out. He emphasises the connections between disciplinary practices and the characteristics of the domains of enquiry (Becher, 1989, p. 1). However, his focus was on research practices, rather than on the way teaching and learning methods were developing.

According to Becher (1989), in the disciplines from the four different knowledge domains such as, hard pure (e.g. physics), soft pure (e.g. history), hard applied (e.g. mechanical engineering) and soft applied (e.g. education), tribalism and tradition play important roles. Disciplines have their own identities, traditions, customs and practices, transmitted knowledge, beliefs, values and rules of conduct, as well as the linguistic and symbolic forms of communication and meanings they share (Becher, 1989, p. 24). The nature of knowledge construction and research methods also varies among disciplines. Each disciplinary knowledge community has its own attitudes, activities and cognitive styles.

Some of the lessons from this first study were that he did not systematically take into account the similarities between specialisms within different disciplines and the contrasts between specialisms within the same disciplines (Becher, 1989, p. 179).

Ten years later, in the second edition of his book together with Trowler (Becher, Trowler, 2001), Becher looks at the changes which had taken place in higher education and how these affected academic "tribes" and their disciplinary territories. In the preface to his second edition, he argues that Clark (1997, p. 24) has overstated the thesis from the first edition of Becher's (1989) book when arguing that the disciplines "determine the behaviour of individuals and departments". In the second edition (Becher, Trowler, 2001), Becher takes an externalist view based on the strength and the number of outside influences which are having an impact on the higher education system. He states that the significance of disciplinary knowledge has been diminished, but has not disappeared. Clark (1996) suggest that the fundamental changes such as massification and marketization in HE have probably less implications for HE, than the explosive growth in disciplines and their fragmentation in to sub disciplines. On the one hand disciplinary areas grow, but on the other hand there is also a decline of some disciplines in their pure forms because new types of degrees (e.g. environmental sciences, sport sciences) require less specialized knowledge (Becher, Trowler, 2001, p. 15).

More recently, Brew (2008) challenges the idea that academics are led by their disciplinary identity because a discipline has distinctive traditions and practices which lead to an academic, social and cultural identity. Brew looks at the way academics view their disciplinary and interdisciplinary affiliations nowadays due to their current academic work, which is leading them to problem oriented research based on societal needs and requires relationships with other disciplines. She questions the anthropological metaphors (disciplines presented as "tribes") used by Becher (1989) and suggests that there is more fluidity of disciplinary identities amongst senior academics because they increasingly move from one discipline to another during their careers. According to her, other models and metaphors, such as watery metaphors of fluidity and floating, could be used to represent the different perceptions of their disciplinary identity and reflection on aspects of their ways of thinking. She points out that the dominant emphasis on understanding disciplinarity and interdisciplinarity has implications for structures and systems designed to evaluate research and teaching such as taking into account the value of interdisciplinary exchanges.

Tensions arise from these disciplinary influences in different social contexts and intensify due to competitive and resource pressures on these disciplines, and the desire to specialise. The scientific methods encourage a reductionist process, which favours specialization to discover new knowledge. Faculty performance systems still reward specialization and individual work, and this is done in a very production-oriented style. However, the benefits to society that governments expect also require the integration of knowledge across disciplines. The new societal demands are having an impact on the different disciplines, which structure the university. Faculties and disciplines seem to hinder the new ways of producing knowledge (Cornford, Pollock, 2003, p. 2). According to Menand (2010, p. 121) the structure of academic knowledge production and dissemination is not going to change easily until professors are produced in an interdisciplinary way.

Many are convinced that the contemporary problems will only be solved by integrating knowledge from different disciplines. Due to the current influences from societal demands and commercial interests (see next section), the significance of the disciplinary affiliation has somewhat diminished. Scholars will need to learn not only on their own, but also in teams with other disciplines. Different types of research arise as indicated in the next section 2.3.2. At the same time, commercial interests may still benefit from narrow science.

2.3.2. Societal demands, partnerships for economic benefits and commercial interest.

External factors have an influence on the developments of the academic disciplines. The knowledge society is asking for societal benefits in the form of new products, processes and solutions to contemporary problems.

Although research has a certain dominance, at least in the research led universities, the traditional organisation of research according to disciplinary rules protected from the outside world is slowly eroding. The meaning of "research" is no longer clear. The traditional notions of curiosity driven, fundamental research and applied research are being displaced by other types of research for social or economic benefit or to serve commercial interest (Slaughter, Leslie, 1997).

The concepts of "mode 2 research" for a "mode 2 society" have been mentioned in the literature for some years now. According to Gibbons et al. (1994), the traditional organisation of research (mode 1) - with rather limited interaction with the world outside the scientific community - is slowly being replaced by research, which takes into account the context,

transdisciplinarity, organisational diversity, social accountability and new criteria of quality control (mode 2 research). For those authors, this change is a consequence of a change in society (from mode 1 society to mode 2) consisting of more uncertainty, new forms of economic rationality, different notions of time and space, and increased capacity for self-organisation. The new "agora" (place of assembly) is now a public space where science, society, market and politics live together. This new "agora" may now be called the knowledge society. Tensions arise because of all the different views in the knowledge society.

Slaughter and Leslie (1997) argue that, through the increase of targeted funding for commercial research, the freedom to pursue curiosity-driven research has been reduced. Research and Development (R&D) policies and shifts in the resource mix have pushed academics to more market-like behaviour. Increasingly, national policies see R&D as a source of wealth creation. According to Duderstadt (2000, p. 118), a change from partnership to procurement is taking place. He states that, from being a partner, the government now becomes increasingly a procurer of research and the university a contractor. Rules of the contract and accountability replace a relationship of trust and partnership. Distrust between the academic world and governments is partly responsible for excessive bureaucracy; government staff, lawyers and accountants are checking every detail of agreements with the government (Duderstadt, 2000, p. 118). Trust will only return if universities are led with competence and accountability to benefit all their stakeholders. Therefore universities need to acknowledge the need to enhance quality and improve transparency.

Duderstadt (2000, pp. 125 -126) refers to the need for a new social contract between the university and its different stakeholders in society. Duderstadt (2000, p. 126) claims that the pressure from faculty members (wanting success and recognition in their disciplinary community) for more and more institutions to adopt the culture and the value system of the research university has affected the public support for research universities in the USA. The concerns of external stakeholders have been ignored when researchers have pursued their own projects instead of addressing important social and economic problems (Duderstadt, 2000, p. 126). These concerns for societal problems were emphasized in the European Science foundation report, "Higher Education looking forward: relations between higher education and society" (2007). According to the report, a new social contract is necessary between higher education and society in order to resolve conflicting economic and social expectations. In particular, universities need to enhance the quality of their research and teaching by integrating many different areas of knowledge and focusing less on disciplinary specialization

(Duderstadt, 2000, pp. 119-125). It seems, however, that the current ranking game, which finds its place in the neo-liberal market system, is inhibiting the expansion of mode 2 research. The economic system received a severe blow from the current financial and economic crisis. Questions, such as which changes in our ethical behaviour are necessary in our economic system, do not fall between existing disciplinary frameworks and are not often asked (Skidelsky, 2013, p. 17). It may be the right time now to promote multi/inter-disciplinary work and find solutions for contemporary societal needs.

Governments and, more precisely, ministries of science and research policy, are pre-occupied with economic competitiveness. The science benefits for society are economic benefits. What used to be called "fundamental science" is on the defence; for those carrying out fundamental science, it seems that academic freedom has diminished or even disappeared. The nature of academic research has changed. Slaughter and Leslie (1997, p. 209) argue that the structure of academic work is changing as a response to the national competition for global market shares and resources. The nations (or regions, such as Europe) develop higher education and R&D policies that lead to a re-shaping of the work of academics and a re-design of undergraduate and graduate education. For the faculty, it is not enough to publish; one should also have the capacity to attract sponsors (in the 1990s, only 11 % of researchers believed funding was adequate). Slaughter and Leslie (1997, pp. 8-12) call the efforts by institutions and professors to secure external funding from the market "academic capitalism". For them, research universities (the public research universities) live in an environment full of contradictions, where faculty and professional staff live in competitive and challenging situations: paid by the public sector, yet also looking for money as entrepreneurs have to do.

The partnership between, - a more elaborate version of this issue can be found in appendix 3 - regions, governments and higher education institutions, which developed in the USA immediately after WWII and which have intensified in Europe since the 1990s, have been beneficial for some, but have also had some less positive consequences for others. For instance, the research partnership between the government and the research university has been important for the American research university, but has also had some negative impacts, such as fierce competition, loss of collegiality and community, and pressure on more institutions to adopt the culture and value system of the research university and focus more on research and less on teaching.

Many of the developments in the USA after WWII also took place in various European countries, at a slower and more diversified pace. A fairly recent development in Europe, the creation of the European Research Area (ERA) which took place during the last decade, shows a great preoccupation with research. Currently, Europe also recognises the importance of partnerships between the governments or regions and their universities.

Science is now globalized and has the characteristics of global corporations. Science exists separate from national sponsors and science foundations. It has also become more based on commercial interests through its connections with the corporate sector, which have been out of balance by giving too much power to corporations according to some, such as former Harvard President Bok (Bok, 2003). The emphasis by some on the social context of research is a reaction against this global commercialisation of research (Duderstadt, 2000, pp. 121, 124-125).

Despite this focus on research, we are confronted with an innovation problem in Europe: "inferiority in transforming results of technological research and skills into innovations and competitive advantages" (European Commission, Green Paper, 1995, p. 5). Graduates from HEIs, who become knowledge workers, need to learn how to translate their knowledge into innovative products and processes. Some entrepreneurial skills may be needed to accomplish this result (see next paragraph and also section 2.3.).This European problem cannot be solved without looking at the broader definition of research as discussed previously (Mode 1 and Mode 2 research). Market-oriented thinking plays an important role in this scenario. Another aspect of the more market-oriented thinking of the last decades is the fact that it sometimes leads to ethical dilemmas in research and teaching. Conflicts of interest arise, for example, when some academics from top medical schools are working with pharmaceutical firms promoting specific drugs (Angell, 2009). The integrity of clinical research and medical practice could be in danger (Wilson, 2009). Corporations are interested in research with commercial potential. For them, research should lead to innovative products and services in order to stay competitive.

A further issue with regard to societal demands is the relevance of the research university paradigm to the learning needs of our society. The role of research within a university is being questioned, because the learning needs of society are being neglected. The public and politicians increasingly question the role of research within the university, especially when the balance between research and teaching has a negative influence on class room teaching

(Duderstadt, 2000, p. 120; High Level Group on the modernization of higher education, 2013).

Focusing on teaching and learning could transform the university into new forms that would compete with research universities in importance. Maintaining the abilities and talents of the students could lead to universities with an emphasis on the teaching and learning mission that become as important as universities with a research mission (Duderstadt, 2000, p. 329). Society no longer accepts that undergraduate education can be neglected in favour of the desires of faculty members to carry out their research, especially at institutions that are more oriented towards teaching (Duderstadt, 2000, p 80, p. 119). The increasing cost of an education and its value in the knowledge society are among the reasons for this attitude.

2.3.3. The consequences of research performance measurement

There have been increasing pressures to measure research performance (details in appendix 4). Various attempts continue to be made but all have consequences for subsequent behaviour of researchers and university managers.

Academics are struggling with the increasing demands of performance-based evaluation of research. Measurement systems and different ranking methodologies have become important to follow up on productivity. The focus on measurement of performance has led to the growth of many different kinds of national and international rankings. International rankings, such as the Times Higher and Shanghai Jiaotong University rankings, have been criticized because of their methodologies, but rankings are here to stay. Most of them are based on research performance and boost the prestige of the research universities willing to play this competitive game. However, they measure "a very narrow slice of what education is about" (Altbach, 2013).

These rather flawed measurement systems (De Jonghe, Vloeberghs, 2001) are an important cause of tension. They cause tensions among researchers because they do not assess the overall performance of academics. (Henkel, 1999 ; see also below). They also cause tension between research and teaching, because there is no similar measurement and reward system for teaching efforts. Human resource issues arise; some academics get more appreciation than others. Research measurement systems cause conflicts between researchers in different disciplines because the interpretation of good research is different in different disciplines.

Gellert (1999) raises an important point when he states that organisation of the learning process should receive primary attention when comparing the relative merits and the efficiency of academic enterprises. Research parameters, such as research output and citation indices, are part of the standards within the profession, but are only one part of the profession. Parameters (such as workload, intensity of supervision and counselling, output of papers and exams, extra-curricular activities, and interaction between teachers and students) for assessing the degrees of social and professional competences of graduates from different countries were mostly lacking until now and are now being put in place by the Bologna requirements. The Erasmus programme, which promotes the exchange of students in Europe, seriously confronted universities with these issues, when the European Credit Transfer System (ECTS) was being set up and course work from different countries had to be compared.

In the UK, the research assessment exercise (RAE) became very important for evaluating research and for universities competing for the second stream of government funding. According to Henkel (1999) the system had a profound implication for the academic profession because it unsettled the existing relationships between individual academics, the discipline, the department and the institution. Staff members could see the failure of their colleagues, not living up to a standard. This led to professional and personal humiliation. Academics' commitments remained to their discipline or subject because it led to a better assessment of their work by their peers. The HEI became involved in the assessment because its status depended on it. New roles were created in the departments, such as director of research. The RAE has influenced the evaluation systems for research in many countries, although the forms of review vary considerably (David, 2008). The following features became prominent in many systems: "concentration of resources in pursuit of efficiency and effectiveness, evaluation against output, transparent measures of performance and clear demarcation of the functions of research and teaching" (Henkel, 1999, p. 16).

Strong scientific reductionist forces form an alliance with the call for measurement for funding purposes: "The sponsored research culture itself has reinforced this disciplinary rigidity in the past" (Duderstadt, 2000, p. 123). Faculty performance evaluation systems are rewarding specialization. Measures are based on quantity of papers published or on grants received rather than quality of scholarship of research or teaching. Due to the lack of more sophisticated measures of faculty performance and achievement, universities forced their faculty members in narrow disciplinary roles and research (Duderstadt, 2000, pp. 122-123) or, on the contrary into the boundaries of the university. A particular kind of specialized research,

which accepts restrictions from their fundraisers (e.g. pharmaceutical companies) is being critized (Barnett, 2003, p. 150). The reductionist approach to science, which has led to specialization in many disciplines, is being questioned by external stakeholders, who would like to see solutions for societal problems, which require a complex approach from various areas of knowledge.

Academic performance and prestige are mainly based on publication of results in scholarly journals after a "curiosity-driven search for new knowledge". In practice, this is not necessarily so. Lucas (2006, pp. 4, 163) gives some evidence from interviews with academic staff and senior administrators, which indicates that all research staff "orient their strategies and practices of publication, funding proposals and conference attendance towards their perception of what is demanded by research assessment exercise (RAE) criteria". Publication pressures may kill creativity, real curiosity and/or novelty. Lucas found that some researchers change their research area to one that is more likely to be included in prestigious journals and that department heads adapt the research areas within the department to fit the values and the possible biases of the members on the RAE panels (Lucas, 2006, p. 132).

The following phenomena with regard to rankings and assessments can be observed: the explosion of College guides; the evaluation and assessment of research and of teaching and learning for whole institutions for quality assessment and accreditation; the benchmarking exercises; national rankings; and global rankings since the first one, Shangai Academic Ranking of World Universities (ARWU), was published in 2003 by Shangai Jiao Tong University. They have to satisfy the public demand for transparency that institutions and governments refused to collude with. There is also the desire for simplistic quick evaluations, which various publishers are only too happy to pander to. Rankings and assessments play a role in the knowledge society by establishing an international presence for HEIs. "In times of significant financial constraints, policy makers in different countries are increasingly interested in comparisons of the performance of various HEIs according to objective indicators" Rauhvargers (2011, p. 11). Rauhvargers (2011) argues that it is almost impossible to measure and quantify quality itself and that therefore rankings use proxies (indicators and weights assigned to them), which often are distant from the actual quality of teaching and research. Rankings are controversial but it seems that they keep proliferating.

Because of this increasing importance of disciplinary research, the disciplines were having a strong influence on scholarly and pedagogical practice (Menand, 2010, p. 76). Competitive

assessment of research through a process of peer review rather than by the extent, to which it meets the needs of the external stakeholders, became the normal practice. One consequence of a research measurement system is the diversion of attention from teaching to research since research funding and staff promotions depend on it. Pressures for performance have resulted in the measurement "fad" and in the ranking "game".

2.4. The focus on teaching, learning and the relationship with the student

The pressure for more student-centred teaching and learning is coming from different directions, the knowledge society, labour markets, and from the Bologna process, particularly in Europe. Since I highlighted the European emphasis of my thesis in chapter one, I will indicate how the pressures are impacting upon the situation in Europe, where the Bologna process is transforming higher education (1.1.3. and appendix 2). In Europe, a diversity of national systems still exists. The Bologna process puts pressure on the different European systems to make their systems more comparable, compatible and coherent. Based on more coherent education systems, governments expect more mobility and better employability in Europe. Governments want to be competitive in the knowledge society.

The knowledge society has become an intellectual concept to describe contemporary developments. The challenge of lifelong learning has to be met in order to fulfil the needs of the knowledge society for well-trained knowledge workers. Lifelong learning strategies should imply social equity and include different type of learners (2.4.1.). An inclusive society will bring about a more diverse student population. Changing student populations will have implications for HEIs, because the educational needs of diverse groups will have to be met by them. Teaching may have to be delivered in different ways, taking into account an increasingly, heterogeneous audience. New university models may be required to deliver lifelong learning services (2.4.2.). HEIs want to deliver a research based education. The labour market and more specifically, large employers require specific skills from graduates, which are not always obtained through a traditional academic agenda, but rather through extra-curricular activities (2.4.3.). The Bologna Process favours a student-centred approach, based on individual study paths adapted to the need of the learners. Such an approach will require an organisational response. It implies an ongoing process, which needs interaction between students and staff. Students should have control over their learning and have possibilities to make study choices based on their needs (2.4.4.).The transition towards a

student-centred approach will bring about a change in the role of the professor for which, in general academics are not prepared (2.4.5.).

2.4.1. The knowledge society and its needs for lifelong learning

Today, states and regions emphasize the importance of the 'knowledge society' for their further development in a competitive environment. Various types of the knowledge society discourse exist. The knowledge society has become a social phenomenon. The term 'knowledge society' has become an intellectual concept to describe contemporary developments. For governments, the knowledge society has become a political goal (Välimaa, Hoffman, 2007).

States, regions and civil society (EUCIS-LLL, 2011) also want everybody to profit from the benefits of the knowledge society. They favour an inclusive society, which brings more social equity. The European Universities' charter on lifelong learning (2008) wants to realise these aims by building lifelong learning strategies to keep up with the demands of the knowledge society and to build the inclusive society.

Several formal and informal regional authorities, such as the Council of Europe, the European Ministers of Education through the Bologna process, the French presidency of the European Commission (from June 2008 until December 2008) as well as the Czech presidency (from January 2009 until June 2009), and the European University Association are promoting the idea and the implementation of lifelong learning strategies.

Lifelong learning is here to stay for various other important reasons. Higher education providers will turn to the lifelong learner since demographic changes, such as changing birth rates and a more diverse and ageing population, will have an impact on the classic student population, which will become more diverse. They are also confronted with new demands, such as the demands from the labour market, individuals and groups of learners who require more flexibility in their acquisition of (new) knowledge and competencies (Artur, Brennan, de Weert, 2007). Governments have a responsibility to prepare for these challenges and expect higher education institutions to contribute by providing appropriate educational services. The recent financial and economic crisis will increase the demand for lifelong learning because jobs are disappearing and learning new skills becomes necessary (Albrecht, 2009).

"New skills for new jobs" is a policy initiative (Expert Group European Commission, 2010) developed at the European Commission level to help ensure a better match between skills and labour market needs, creating stronger links between the world of education and the world of work. Employers will require an appropriate mix of generic competences and technical skills, including digital skills, from the future workforce (Expert Group European Commission, 2010, p. 25).

A mismatch between the labour market and the graduates of our higher education institutions still exists according to Quintin (2008), Director General for Education and Culture at the European Commission. Some university leaders and government representatives responsible for HE, however, would say that it is not a part of their role to solve these problems and that this match cannot be expected (Teichler, 2009).

New phenomena arise, which support the need for more lifelong learning possibilities. A survey conducted by the Princeton Survey Research Associates (2005), found that half of Americans aged 50 to 70 years old are eager to find work with a social impact after their primary career ends. One example, which illustrates this finding, is the executive retraining programme, a new programme, started by Harvard University in 2008, which could become a third stage in university education. Student fellows aged in their fifties and sixties started a year long programme focusing on social problems such as poverty, health, education and the environment intended to help them in their careers as social entrepreneurs or as leaders of non-profit organisations (Lohr, 2008). While this initiative is aimed at the highly skilled, other initiatives described in the next paragraph concern all future employees.

In an interview with Shillingford (2009), Mike Short, Vice-President for R&D Telefonica O2 Europe, and former chairman of the GSM Association, predicted that by 2020 the public sector will be spending less for education (and also for transport and for health) due to the fact that large businesses will enter this domain. According to him, learning will be about acquiring the tools and technology which are needed to obtain and use information at every stage of life. However, access to information does not immediately turn into meaningful knowledge (Guri-Rosenblit, 2009, p. 58). Shillingford (2009) claims that people will learn to construct knowledge through the process by which they obtained this information. According to Guri-Rosenblit (2009, p. 58) accessible information can only turn into meaningful knowledge with the assistance of a teacher or an expert. Shillingford (2009) suggested that

after 2050, digital literacy will be essential to avoid mass employment. Everyone will have to be able to learn outside the class room and throughout life (Shillingford, 2009).

The discourse about the knowledge society is closely linked with the discourse about the information society. Information is seen as data that have been organised and communicated and that can be commodified. The speed of the technology sets no limits on the amount of information available. In the knowledge society, information is mastered in order to contribute to innovation. The commoditisation of knowledge in education is not so easy. In particular, the standardisation of pedagogy aimed at sharing this knowledge with students, seems to be difficult since it consists of standardising human interaction (Välimaa, Hoffman, 2007, p. 11). On the one hand, there is this demand for more standardisation of basic knowledge in education in order to reach a broader public in more effective ways. On the other hand, there is the need for more complexity, flexibility and customisation in education for specific groups in society.

Besides the changes in accessing and acquiring knowledge, developments of networks also could create a new dynamic in (higher) education. Networks make it possible to carry out collective and collaborative activities. A new dynamic in (higher) education will allow it to face several competing demands.

The challenge of lifelong learning has to be met in order to fulfil the needs of the knowledge society for well-trained knowledge workers. This means the provision of education from initial education to higher education and then to adult continuing education. Europe's organisations (educational and others) will have to cope with this in the middle to long term.

The concept of lifelong learning has different meanings according to the context in which it is used. Discussions on lifelong learning are confusing because of the different content given to the concept: lifelong learning from initial education, through higher education until adult education, or different types of adult education, such as professional needs, and education for a second chance or for third age. In the preamble of its charter on lifelong learning (2008), the EUA mentions the confusing terminology: initial education for disadvantaged groups; continuing education and training for well-qualified graduates; and post-retirement opportunities for cultural enrichment, as well as the varying local, regional and national interpretations of these concepts. From a rather narrow concept, mostly applied to education for groups which did not have the opportunity to study early in life, it has become a broader one, applied to different circumstances. In view of the demographic changes (an ageing and

more diverse population) in Europe, it is no longer an outcome for a limited group of people who did not get a higher education between 18 and 22 years old. The Council of the European Union states in its Third Joint Report with the European Commission (2008) that "lifelong learning supports creativity and innovation and enables full economic and social participation" (p. 2). It also acknowledges that implementation is still the greatest challenge for lifelong learning strategies. Strong institutional commitment, coordination and partnership with all relevant stakeholders are necessary conditions for proper implementation (p. 7). According to the report, many countries have made progress in defining strategies. Progress has been made in pre-primary education, qualification frameworks and in the validation of non-formal and informal learning. Nevertheless, innovative learning partnerships and sustainable funding for high quality, efficient and equitable education and training, are still not getting the necessary investments from governments across Europe.

The report also states that adult participation in lifelong learning no longer achieves the EU benchmark. Until 2005, progress was made towards meeting the EU benchmark (12.5 % of adult participation in lifelong learning). In 2006, an average of 9.6 % of Europeans aged 25-64 were attending education and training activities (slightly less than in 2005). Behind this figure, an important imbalance is hidden. Highly educated adults are more than six times as likely to participate in lifelong learning as the lowest skilled people. Among migrants, there is a concentration of people with very basic skills. Due to demographic and labour market trends, increased demands for more advanced skills are to be expected. As a result, there will be fewer opportunities for the lowest skilled people, who will need special attention (p. 12) in order to prepare them for changing labour markets.

2.4.2. A changing student concept and its implications

As noted in the previous section, the knowledge society favours an inclusive society with more social equity. Lifelong learning strategies are being used to build this inclusive society. I also indicated that the classic student population will become more diverse because of demographic reasons and because of new demands for education from the labour market, individuals and other groups of learners. The individual learning needs of these different learners will have to be met.

A changing student concept

Student populations are already changing. Different ways of defining the students now exist: the young, adults and life time learners. Students in HEIs are not a homogeneous group any more (18-22 years old, just out of secondary school). HEIs must be prepared to respond to the educational needs of diverse groups in a knowledge driven society. Duderstadt (2000, p.17), states that "only 17 % of American students enrolled in college today are in the eighteen to twenty-two-year-old group", a group generally considered as traditional college students. Increasingly, college students have a broad range of educational and life experiences. The increasing needs of more diverse learners (e.g. in age, gender, race, socio-economic background) may require an approach to education which is different from the existing way of transmitting knowledge. Many students are working adults, responsible for earning their own money, for whom relocating to a campus is difficult and expensive because of geographical distances, time differences and the working-life balance. These new adult students demand a higher degree of quality and relevance in their education (Duderstadt, 2000, p. 17).

Jarvis, Holford and Griffin (2003, p. 10) observe that education is no longer a welfare provision, or a meeting of social needs. Rather, education has to be seen as a road to wealth production for all members of society. This can be interpreted in two ways. Education can be seen as a commodity to be sold by the provider (courses for sale). Education can also lead to economic wealth for the consumer (a way to the job market). It has become a matter of market provision.

Several authors (Jarvis, 1987; Griffin, 1987) argue that the meaning of "needs" has changed. The term no longer indicates "a generalized need of potential students" but it refers to "special needs" of different groups in society. For this reason social inclusion is one of the aims of The European Community's policy on lifelong learning. Since 2007, the European Commission has integrated its various educational and training programmes (Comenius for schools, Erasmus for higher education, Leonardo da Vinci for vocational education and training and Grundtvig for adult education) in the Life Long Learning Programme 2007-2013. In several countries, government policies also call for widening access for non-traditional groups (e.g. potential students staying in prisons or in hospitals, students with physical or specific health problems). This call for a more inclusive education could have an impact on the delivery channels of universities. Sometimes it is assumed that lifelong learning is different from provision to traditional students or from widening access. However, from its beginnings,

lifelong learning has two main parts: widening participation and learning throughout life (including to traditional students) (Smidt, Sursock, 2011, p. 15). Universities are asked to offer services to different target groups and link widening participation and lifelong learning (Smidt, Sursock, 2011).

Driven by market forces, we now go from the professor-centred supply side, where a teacher identifies and presents knowledge to mostly passive student audiences, to the student-centred demand side, which implies that students expect much more control over their learning experience. Many traditional universities are not at ease with the changing student demands. Durkin and McKenna (2011, p. 41) observe that there is much debate, "both in the academic literature and at the level of HE marketing practitioners regarding the perceived positive and negative aspects of the 'student as customer' concept". They wonder if the student is a customer or a client for a product (a degree), a commodity (content of learning sold as a commodity) or for learning services (need for professional advice)? The more market-oriented thinking of the last decades may also lead to the exercise of consumerism by students according to some (Naidoo et al., 2005; Geiger, 2004). Consumerist mechanisms such as performance indicators and league tables provide students with the means to evaluate teaching and learning and guide choice. The consumerism of the students would make the students passive consumers of educational services. They would have a sense of entitlement, a right to educational success. This would bring about a loss of responsibility for their learning and a resistance to education as a process (of learning). Requirements from external stakeholders (students, parents, executives, companies), seen as "consumerism" emanating from the neo-liberal market and new managerialist frameworks (Naidoo et al., 2005), could give the impression that "ready made" knowledge (knowledge packaged as a commodity with an economic worth on its own) is wanted by some.

According to Naudé (2004), the student is often a "consumer" and companies and larger networks are the real "customers" since there is no long term repeat business relationship with students. Companies can be customers for a long period of time by recruiting students from HEIs and by sending their employees to specific programmes. Marketing techniques can be applied to companies in order to retain them as customers. It is more difficult to apply those techniques to students, who leave the university after graduation. This point of view seems to neglect the potential of applying marketing techniques to the graduates, who have become alumni and could become customers. Armstrong (2003) suggests a student-as-client model, where the university is like a professional firm and the student is a client paying a fee to

receive the service. Following Webster's earlier ideas (1986), Armstrong (2003, p. 372) distinguishes between a customer "purchasing a commodity or a service" and a client "engaging the professional advice or services of another". Both the customer model and the client model are looking outwards to view the students as market segments to be served by programs. Customers rely on their own judgement to evaluate a purchase. A client must relate on professionals to tell them what they need. The client model looks at the underlying needs of the student, employability and intellectual development.

The consequences of the changing student concept

It is important to providing a quality-assured, research-based education to all these different target groups, consisting of different types of adult learners (see sections 1.1.1. and 1.2.). These different groups require a specific value proposition from the HEI with regard to educational services (Smidt and Sursock (2011, p. 15). Not every HEI is prepared for this, because these groups require the adaptation of the traditional functioning of the HEI and of the role of the professor. Because a student-centred approach takes into account the different learning needs of the different groups of students, it is a challenge for teachers to find the proper processes to interact with an increasingly, heterogeneous audience. The life experience that adult learners bring to the learning situation differentiates them from other students. Teachers can make them reflect more theoretically and critically on these experiences. Some teachers are more supportive towards adult students than others, often depending on the disciplines they belong to, such as law or sociology which allow for more interactive methods to which adults seem to respond (Bourgeois et al., 1999, p. 118). Methods for adult learning will have to be applied not only for the traditional, occasional adult learner, but also for the changing (older, with special needs explain) student population and the lifelong learners. It will require a change in attitude in order to improve access and to adapt teaching methods to the experience of adults (Bourgeois et al., 1999). The first contact with the university is with the admissions department and its procedures. For adult students, who have been out of the education system for a while, this is a difficult step. Besides a positive and welcoming approach to adults, understanding their learning needs is also important, since most of them are combining study with work or family (Bourgeois et al., 1999, pp. 102-103). Based on interviews with mature participants about their attitude towards lectures and seminars, Bourgeois et al. (1999, pp. 107, 118) conclude that the teaching skills (well structured and delivered) of the lecturer are considered important for mature students. Mature students are

also concerned about the academic language used in the disciplines and they like to obtain precise information for essay writing and examinations (Bourgeois et al., 1999, p. 108).

Delivering teaching in different ways means using interactive pedagogical methods, such as problem-based learning and case-study teaching and learning. Engaging in interdisciplinary teaching and learning, in collaborative learning and in experience-based learning also becomes important. Many of these forms of education have been mentioned in the literature and practised for many years. Savin-Baden (2000, p. 5) points out that as far as problem-based learning is concerned, most literature focuses on the practical applications and not on the analysis of complexities and challenges involved in its application. This method focuses on knowledge building through solving problem scenarios rather than through subject knowledge already acquired. While defining and analysing the problem in a small group, learning goals are formulated (questions, which will be answered) and external information is gathered and synthesised in order to solve the problem. The method requires flexibility and adaptability, problem-solving and critique, something less familiar in traditional methods. The teacher is facilitating the learning process of the group. Savin-Baden (2000, pp. 2-5) argues that the potential of problem-based learning still needs to be realized based on the following perspectives:

- She recognizes that through this method many students begin to understand how they learn and how they would act as future professionals. Curricula, which implement problem-based learning, do not enough support the students in managing these personal and learning challenges caused by problem-based learning.

- She observes that the theory about problem-based learning is less welknown in practice. She demonstrates this by drawing the attention to the existing confusion between problem-based learning and problem-solving learning. The latter consists of given the students a reading and a set of questions, for which they have to find the answers and bring them to class for discussion. The solutions are to be found in the material that has been provided to the students. Problem-based learning is much more student-centred. Students can explore various information sources and link it to their own learning needs and acquire independence in research.

Requirements for adapted learning processes imply some serious questioning about the implementation possibilities of the missions of traditional universities. A look at new university business models is needed. Ernst & Young (2012, pp. 4-5) predict that:

- Some established universities will progressively transform the way they deliver services and administer their organisation ("Streamlined Status Quo"). This model consists of:

  - Different groups of student learners

  - A broad variety of disciplines offered (disciplines maintained if profitable)

  - Digital and blended (digital and face to face) delivery

  - Partnerships with public and private HE providers and other partners to reach more efficiently existing markets or new markets

  - Outsourcing of back-office functions or shared service arrangements to lower operating costs

- Others will fundamentally reshape and refine the range of services and markets they operate in ("Niche Dominators"). This model stays for:

  - A particular customer segment

  - A limited range of disciplines offered (focus on strength and credibility)

  - Strong alliances with industry in the chosen fields (partnerships for R&D, commercialisation and innovation, professional skill development and lifelong learning)

  - Outsourcing of back-office functions or shared service arrangements to lower operating costs

- Incumbent universities will create partnerships with new entrants from other sectors and create new lines of business which will create revenue for the core processes of internationally competitive teaching and research ("Transformers"). This model implies:

  - The extension of the definition of a HE "customer" including wholesalers, content consumers, financiers, employers and parents

  - The unbundling of the value chain (new areas of specialisation: content aggregation, mass distribution, assessment, certification)

- The combination of traditional educational services with services in other industries such as media and entertainment, financial services and venture capital

- Digital sales and delivery (face to face services from partners if necessary)

- Outsourcing of all back-office functions

A look at these proposals for new university models, which could lead to adapted processes and different implementation possibilities of the missions of HEIs, shows that the first model "Streamlined Status Quo" implies the use of digital delivery. I assume that ICT is seen as a technological mean to support teaching in established HEIs and that therefore there is less interest in the possibilities of ICT. In chapter 3, I am finding out why ICT developments are not having more impact on the organisational model and strategy of traditional HEIs.

2.4.3. Pressures from the labour market on the academic agenda

The labour market often represented by large employers, want their knowledge workers to display skills, which will not be obtained, through academic work only. Employers, governments and students often see teaching and learning in the context of employability (Harvey, 1999a). Several employers claim that more graduates with social skills are needed in a fast-changing world. They are looking for graduates who are innovative and are able to lead, to think analytically and to work in a team. These claims for an education which is larger than the traditional academic agenda are made by different groups (Taylor, 2006, The Wall Street Journal, 2013). However, students should learn some aspects of research such as researching issues and summarising and synthesising materials. It is important that students are learning on the basis of new research. They have to translate what they have learned in new social processes and in innovative products and processes.

In section 1.2 (on the challenge of implementing lifelong strategies), I pointed out that academics often see teaching in the context of their discipline in which research and scholarly output play an important role (Biglan, 1973, a, b). The curriculum is often strongly influenced by the personal research process of the teacher and based on an academic agenda. Traditional institutions try to solve the tension between teaching and research by promoting the unity of research and teaching at the institutional level (more details in appendix 5). What does this mean? - and is it effective?

By the term 'unity' it is usually meant that teaching should be research-based. However, the 'debate' fails to make distinctions between different types of research related to teaching. A distinction should be made between:

- research led teaching and learning (e.g. teaching, research methods, and getting students to learn by doing their own research as in project work or assignments, readings etc.),

- research informed teaching (presenting findings from research and discussing its implications), and

- research that has yet to be incorporated in any curricula (if it ever is).

Not every academic possesses the right competences to carry out research led or research informed teaching with a focus on the learning of the student (see section 2.4.5.). A reason for this lack of focus on the learning of the student could be that research and teaching are different activities with different qualities and characteristics, requiring specific competences. Barnett (2003, p. 154) argues that the conceptual and practical linking of research and teaching neglects the differences between them. Imposed (rather artificial) links between research and teaching do not recognize the tension between both activities. Barnett (2003, p. 154) states that: "The linking strategy fails to attend seriously to the ideological character" of the current discussion about the tension between research and teaching. Distinct academic identities are not going to be unified by proclamations of linkage. There are differences among the scientific disciplines and even among academics in the same discipline in their approach to this unity; one model for all does not exist.

In the discussion about the unity of teaching and research, the different concepts of research mentioned above, are mixed up:

- Research led teaching and learning makes it possible for students to construct their own knowledge.

- Research informed teaching makes it possible for academics to incorporate their personal learning (based on their own research or research from their peers) in their teaching.

- Research that has yet to be incorporated in any curricula is not immediately related to teaching.

The Boyer Commission Report (1998, p. 15) recommends that for undergraduate education in research universities, research-based learning should be the standard. The report requires a new emphasis on a point made by John Dewey almost hundred years ago: "Learning is based on discovery guided by mentoring rather than on the transmission of information. Inherent in enquiry-based learning is an element of reciprocity: faculty can learn from students as students are learning from faculty".

Ferris (2002) would rather see the student as a partner in a learning process. He sees the student as junior-partner with the professor as senior- partner. The partner model takes an inward view on the collaboration with the student. Partners contribute to the output of the organisation (e.g. as a research or teaching assistant). They have an interest in the role of the faculty. The interaction between senior and junior can be seen as a mentor relationship. The junior partner model can be applied in doctoral programmes where the class sizes are small, the educational maturity is high and the interaction can be extensive (Ferris, 2002, pp. 191-192). It is less relevant for lower level degree programmes.

A policy report from the 1994 Group (2009), which represents 19 of the UK's leading research-intensive universities, recognizes that co-curricular activity[8], organized in parallel with the degree curricula, improves the employability and career prospects of graduates. However, employers, governments and students often give different meanings to employability skills than academics (Hillage, Pollard, 1998, Harvey, 1999a, Conference Board Canada, 2000). For them employability is more that academic skills; it is about work and the ability:

- to gain initial employment. Therefore career advice and understanding the world of work should be part of the education system.

- to be able to maintain it. This includes being able to switch between jobs and roles within an organisation and

- to obtain new employment, if necessary. This means being able to manage transitions between organisations.

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[8]   Co-curricular activity: comprises a range of activities such as skills sessions, volunteering, work experience, sports and active membership of societies.

Kwok (2004) points out that, employers often complain about the skills of their employees. He used the data from a Canadian survey (Angus Reid Group, 1999) among graduates who had graduated for less than 2 years. He found out that these graduates are convinced they developed and obtained employability skills which they used in their work environment. Based on the survey results, Kwok (2004) proposes that graduates should make their skills more explicit to employers by demonstrating their employability assets and present them to their employers in a more accessible way.

Harvey (1999a, p. 13) argued that employability is about the relationship between higher education and employment. According to Harvey (1999a, p. 13), "employability raises fundamental questions about the purpose and structure of higher education". It touches the balance of power between the education provider and the participants in the learning experience. According to him "employability is not about training or add-on skills but about how higher education develops critical, reflective, empowered learners".

Recently, the team of the Model United Nations (MUN) Society in Belgium received the outstanding large delegation award at the Harvard World MUN 2009 in The Hague (Netherlands). Their representative mentioned the need for mastering skills not taught at universities. The organisation offers their members training opportunities for speaking, debating and negotiating. They also encourage their members to meet with leaders, diplomats, politicians and executives, and to participate in extra-curricular activities[9]. Indeed, some scholars recognize that extra-curricular activity can have an important influence on the transition to work and make it easier (Tchibozo, 2007). However, it is acknowledged that it is difficult to integrate extra-curricular activities within the classroom. Besides, several groups of students, differentiated by social class, ethnicity and gender, are not able to participate in on campus/outside the classroom/extra-curricular activities because of reasons such as cost, commitments to paid employment, childcare commitments, geographical location, and family/community expectations (Stuart et al., 2009).

Leijnse (2008), a member of the first Dutch innovation platform (The Netherlands), which was established in 2003 as a temporary organisation, and was re-established by the Office of

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[9]   The Model United Nations (MUN) is an academic simulation of the United Nations. http://www.munsociety.belgium.org

Prime Minister Balkenende IV (2007-2010), to strengthen The Netherlands' capacity for innovation, emphasized at a conference in Poitiers (2008) organised by the Association of European Distance Teaching Universities, that, nowadays, we are confronted with the growth of non-linear knowledge production, based on collaboration between universities, industry and government. According to Etzkowitz and Leydesdorff (2000, p. 114), "non-linear models of innovation take interactive and recursive terms into account". They point to the multiplier effect between the activities of the three different parties.

The relationship between universities, industry and governments has changed. Those three actors entered into a reciprocal relationship in which they attempt to improve the performance of the other. For Etzkowitz (2008) this is the beginning of the triple helix regime. According to him, the next step is for each actor to take on the role of the other while maintaining its primary roles and separate identities. This means that actors are changed by the interactions between them. Later on, each actor engages in new ventures. For universities this means that they continue disseminating knowledge even if they take on some business and governance functions. This combination of roles is the basis of social creativity, which leads to a new global system of innovation.

Leijnse (2008) elaborated on the consequences of this type of knowledge production. For him, this means that trilateral networks (industries, governments and academia) and hybrid organizations (Etzkowitz and Leydesdorff, 2000, p. 115) are becoming important in collaboration for knowledge: multi-modal research for a multi-modal society. This refers to the new mode of knowledge production (mode 2) observed by Gibbons et al. (1994). Leijnse (2008) argued that innovation calls for more democratic, (involving broader networks of people) and less exclusive processes in research and learning (not isolated scientists separated from society). Cooperation between knowledge workers in and outside universities is necessary for resolving social and economic problems and crises. Social innovation is a necessary prerequisite to technological innovation (Kanter, 1988, 1996). Leijnse (2008) cautioned that social processes, in which the human factor is crucial, have to be first innovated before other technologies can work. In the knowledge society, creativity and innovation have become a production factors. Competitive advantage lies in the quality of the human resources. This has consequences for lifelong learning; the demand for formal and informal learning will rise because of the need for a more highly skilled, professionalized workforce (one of the social structural factors supporting innovation).

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2.4.4. Development of a student centred approach

A student centred approach implies an ongoing process, which allows for individual study paths adapted to the needs of the learners and will require an organisational response in order to integrate this teaching and learning philosophy in the organisation as illustrated by the project discussed hereafter. From a European Commission funded project called "Time for student-centred learning" (T4SCL), Smidt and Sursock (2011) conclude that effective student-centred learning consists of an ongoing reflexive process, which requires cooperation between students and staff and does not have a 'one -size-fits-all' solution. Another important aspect of student-centred learning is, that students should have control over their learning. Since students have different learning styles, teachers should enable them to learn, not telling them what, how and where to learn. This means that choice is another central element in student-centred learning. Because students have different experiences and background knowledge, they have different needs and interests (Smidt and Sursock, 2011, p. 16).

A presentation during an annual seminar organised by the European University Association (EUA) for the team of Institutional Evaluation Programme (IEP) evaluators in 2009, about the forthcoming "Trends 2010 report" from the European University Association, reported that it has been very difficult to implement some features of the Bologna Process, such as student-centred learning (De Jonghe, 2009). The level of resistance is great, but also depends on the level of resources for support for student-centred learning. Teaching philosophies are difficult to change, especially when staff and students are confronted with excessive demands.

Based on the conclusions from the above T4SCL project, it appears that there are a number of success factors for implementing student-centred learning; not all within control of the HEI but depending on institutional autonomy and funding (financial, legal and regulatory constraints) and on the capacity for cultural change and adaptation for staff and student. In any case, the developments towards more flexibility, individual study paths adapted to the needs of the learners, will require an organisational response. The focus on learning requires the specification of learning outcomes (based on the teaching aim and the actions by the student to arrive at the learning outcome). Familiarity with the goals of the students and assessment of their needs (or "wants" if one only sees the pressures from the market) is another requirement. In order for students to become active learners, responsible for their own learning and outcomes, the following aspects should be taken into account with regard to:

Courses:

- Curricula and course content need to be adapted and structured in a modulair way with progression paths based on credit accumulation and with learning outcomes.

- Responsibilities for curricula need to be with pedagogical teams.

- Course design becomes important.

- Evaluation processes have to be reviewed; the internal quality assurance programme needs to be in accordance with teaching goals.

Delivery/methods/environment:

- Interactivity and discussion in the classroom should be increased.

- For seminars and group work, the architecture needs to be adapted.

- For individual work outside the classroom:

  - Flexible delivery of courses and course material (digital, mix of face to face and digital) should be available.

  - Delivery with a flexible time schedule becomes important.

- Digital connections become a necessity.

Guidance:

Academic, professional and psychological guidance for students should be available when students need them. Student support services are essential to guide the students in their choice process:

- Faculty and staff members will become coaches, advisors and designers of the learning experience, the processes and the environments.

- Lower student-staff ratios are advisable.

By taking into account the above mentioned aspects, many HEIs are changing their approach to teaching from faculty-centred "in which faculty determine what to teach, whom to teach, how to teach and where and when to teach" to student-learning-centred in which "learners have more options and control over what, how, when, where and with whom they learn" (Duderstadt, 2000, p. 88). Duderstadt (2000) bases this assertion on the fact that "in our

increasingly democratic market - driven world the concerns of individuals as clients or customers have become the focus of most successful organizations". Teacher-centred differs from learner-centred instruction with regard to teaching goals (from covering the discipline to core learning objectives), how students learn, pedagogy, course delivery, course grading (grades indicate mastery of learning objectives), faculty role and effective teaching (use classroom and program assessment to improve) (Allen, 2004).

The emergence of new cognitive theories in the psychology of education, which emphasize how the student experiences his or her own learning process (phenomenological theory, Marton, 1996) and which emphasize the situational - or context related - character of human knowledge (meta cognitive theory, Resnick, 1996), and constructivism, for which learning is an active and constructivist process, play a role in the development of the teaching concept in universities (Kallenberg A.J., et al., 2000; see also below).

From these theories, it appears that more and more pedagogical experts (Kallenberg A.J., et al., 2000, pp. 34-35, pp. 41-42) are convinced that acquiring knowledge and being able to demonstrate it comprises four components:

- Possessing a basic knowledge of domain specific characteristics (e.g. symbols, conventions, formulae…) in a particular study field.

- Using cognitive strategies (e.g. making a drawing, comparisons with another problem…) by taking a systematic and planned approach in order to solve a problem (Vermunt, 1992).

- Meta-cognition: knowledge, opinions about one's own cognitive functioning and capacity for change of one's way of functioning.

- Affective components: opinions, attitudes, emotions towards a field (e.g. fear of abstract sciences) (Mcleod, 1992).

Assimilating "ready-made" knowledge and procedures discovered and institutionalised by earlier generations is being replaced by a new vision, which integrates the four components in one's own cognitive functioning in several situations (Kallenberg A.J., et al, 2000, p. 34). According to this vision, a teacher should not only be aware that his students assimilate domain specific knowledge but also more general learning outcomes consisting of cognitive, meta-cognitive and affective components.

In a student-centred organisation, learners can play an active role in "constructing" their own meaning when learning something new. These progressive pedagogies are based on constructivism. Le Cornu and Peters (2005) argue "that there are varying conceptions of constructivism, depending on whether the emphasis is on individual cognitive processes or the social co-construction of knowledge". The implementation of pedagogical principles based on constructivism can be enhanced by the possibilities created by ICT. Constructivism states that people construct their own understanding and knowledge through experience and reflection on these experiences. It does not exclude the active role of the teacher or the value of expert knowledge, but it changes their role into the role of a guide. The guide is trying to engage the student in applying existing knowledge and real world experience. Collaboration among students becomes important because it contributes to this learning.

Wenger (1998) added to learning theory, the importance of the concept of 'communities of practice'. This concept can also be applied to the sector of education (Wenger, 2006). According to Wenger (1998), communities of practice are groups of people who engage in a process of collective learning in a specific domain and who regularly interact with each other. It is essential that they share the same interests. This implies a commitment to the domain and a shared competence. Members of the community build relationships, which allow them to interact and learn together. The members of the community are practitioners who can share their experiences, stories, tools and ways of problem solving in a sustained way. These communities can have various forms: small or large; local or global; with core members and with peripheral members; within an organisation or from various organisations; face to face or on line; and more. They go beyond formal structures and imply groups in which informal learning takes place.

The concept of learning through others (in a learning community), has become an important insight. Besides being used in education, the concept has been applied in different sectors of society, such as organisations, government, education associations, the social sector, in international development and on the web (Wenger, 2006). It has a significant influence on educational practice with regard to three aspects. How can an educational experience be organised so that learning around subject matters takes place in communities of practice? How can students participate in communities of practice outside the school walls? How is it possible to organise communities of practice for lifelong learning students?

Trowler et al. (2009, pp. 7-15) link socio-cultural theory and its key aspect, social practice, with social groupings, such as activity systems or communities of practice, and use it as a conceptual basis to discuss contemporary cases of enhancement initiatives in higher education and its cultural realities. One of these cases (Molesworth, Nixon, 2009, pp. 164-171) is about an attempt to alter the power relations between teachers and students which are an element of traditional higher education. The attempt involved letting students become the producers of knowledge instead of consumers of knowledge. Therefore, an online learning space was set up. From the case analysis, the resilience of traditional roles was apparent. Trowler (2009, pp. 19-21) argues that changing roles will be difficult to implement and will take time to take effect. It will be difficult because professors educated according to the traditions of their disciplines will have to be influenced and convinced by the new pedagogical theories (Trowler, 2009, pp. 19-21). These theories will require action by the professors for which most of them have not been prepared.

Barnett (2003) sees a shift from a professor presenting a disciplinary culture to students to pursuing an interest in the self-generational capacities of students. With the emergence of new ideas of learning, lecturers have to consider carefully the pedagogical methods they use and the design of the curriculum. According to Barnett, learning also becomes an ideology, which is more concerned with learning outcomes than with the pedagogical process. This seems to be the focus of some international organisations and governments interested in results (e.g. for evaluation of student performance at the global level: AHELO, OECD). However, some higher education institutions, already focused on the learning of the student are involved in the development of new pedagogical processes (e.g. problem based learning, project based learning) based on new theories about what learning should entail and how learning takes place (e.g. problem based learning at the Faculty of Medicine of the University of McMasters, Canada; The University of Maastricht in the Netherlands since 1974) (Kallenberg A.J., et al., 2000, pp. 135, 141). In problem based learning, students are acquiring knowledge while looking for additional external information for solving the problem or carrying out the task. In project based learning, the students have to solve the problems based on the knowledge and skills they already acquired through other courses taught in the same period (Kallenberg A.J., et al., 2000, pp 135, 141).

Putting in place new patterns and pathways of study is time consuming and costly. Experiments with flexible learning paths and new pedagogical methods are already taking place (e.g. the Bologna reforms). Some authors (Brown and Duguid, 1996; Duderstadt, 2000,

p. 300) are indicating that students will create their own learning path, by choosing a degree-granting body and designing their own education, using services of various faculty and learning environments. This will transform the way value is created within higher education (Ernst &Young, 2012, p. 9). Ernst &Young (2012) conducted an industry-wide study (interviews with more that 40 leaders in the higher education sector; details mentioned in section 1.1.1.) of the most important forces influencing higher education, globally and locally (Australia) and concluded that universities will have to transform their way of operating if they want to secure their impact. They mention the rise of public and private providers, which will specialise in parts of the value chain such as content generation, content aggregation, mass distribution, certification and commercialisation (Ernst &Young, 2012). Web-based learning makes it possible to structure one's own learning process. It allows for non-traditional instruction through a new medium. Ernst & Young (2012, p. 9) give the example of the so-called Massive Open Online Courses (MOOCS), which are for them "an early stage example of the search for new models".

2.4.5. The changing role of the professor and its implications

Many traditional universities in Europe have had to adapt fairly quickly to the Bologna reforms. Many transformations were rather formal and consisted of an adoption of the three cycles, bachelor, master and PhD. Many curricula were unchanged and still need to be rethought (High Level Group on the Modernisation of Higher Education, 2013, recommendation seven). Age-old professor-centred styles of teaching have not yet disappeared.[10] Indeed, current expectations (more research, finding money), incentives and rewards often maintain the status quo among academic staff (Finnegan, 1997, p. 480), who have less time to devote to teaching.

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[10] Based on personal notes of a presentation about the impact of the Bologna Process in Copenhagen (October 1-3, 2009), by Institutional Evaluation Programme pool members who participated in the European University Associations site visits in preparation of the Trends 2010 Report. This report was published by the European University Association in March 2010. It gives an overview of the adaptation of European Universities to the Bologna Process during the last decade.

In many traditional universities, academics have to deal with multiple tasks and demands, and feel overwhelmed. However, the professors who would like to adapt their teaching according to the new canon, student-centred learning, are left mostly without support. Support systems are not organised to deliver teaching services to students or to professors. Where is the guidance for students treated as self-regulated adult learners? The literal translation of the Dutch concept of "begeleide zelfstudie" is "accompanied self study". However, this accompaniment is difficult to carry out. The students are left mostly on their own (sometimes dealing not only with traditional tasks, but also with extra tasks and often facing a technology platform which gives them more information than they can handle).

According to Elen (2003), the following factors impede the embedding of the "guided independent learning" (GIL) concept in the university culture: the lack of effective educational structures; conflicts of interest, that make it impossible to implement the strategy with sufficient financial means for support systems; and specific ideas of what is the role of a professor.

Faculty roles need to be transformed through a managed partnership of faculty and administrators working to strike an appropriate balance between autonomy (as experts in their knowledge field) and accountability (obligations within and outside the community) (Finnegan, 1997, p. 480). The transformation should concern organisational structures (eg interdisciplinary centres), faculty personnel policies and practices (eg support for team projects for the common purpose, value attached to the different kinds of scholarship) and faculty development (e.g. to explore interactive distance and on-site digital technology systems) (Finnnegan, 1997, pp. 490-497).

Traditionally the teacher is the central agent or even the "authority". They control both the content of the subject and the way it is taught. Teaching often means "lecturing". The student often plays a passive role (depending on the education system and the class size) and is expected to absorb and often reproduce (at least in some education systems) what has been taught or prove the content acquisition through a final examination (Hanna, 1998; Kallenberg et al., 2000, p.132).

The classic paradigm of teaching as lecturing (developing and presenting knowledge to students) is being questioned (Duderstadt, 2000, p. 84). According to Laurillard (2002, 2nd ed, pp. 240, 241) the responsibility for student learning, implies that teachers ought to understand how their students learn. She states that the dialogue between teacher and learner will always

be important, regardless of the delivery infrastructure, which plays a supporting role. Laurillard (2002, 2nd ed, pp. 92-94) also argues that a professor should no longer lecture ("except for the occasional inspirational lecture"), but deliver teaching in a different way since lecturing is not an adapted teaching method when open access and modular courses are attended by students who do not have the same background and capabilities. Laurillard (2002, 2nd ed, p. 93) explains that this is pertinent because "the open access that creates a highly diverse audience, makes lectures inefficient for the individual, in terms of pedagogical needs". Leong (2003) suggests that teachers are transforming from a "figure-head" to a "participant".

Teaching moves to learning; the student is now seen as a learner. Traditional professors, not trained in the modern visions of student learning processes, wonder what student focused learning means and how they should go about it. For some, teaching takes time away from their research. In some cases, lower level knowledge workers (graduate/PhD students) are left with the tasks of taking care of instructional needs, while they prepare for a career in research (Duderstadt, 2000, pp. 95, 96-98).

Although HEIs offer a variety of learning activities, most improvements take place within the existing model, mostly the class room experience on campus (Duderstadt, 2000, p. 81). The basic model of education consists of three or four years of study, two semesters of study a year and 5 or 6 courses each semester. The courses are a mixture of general survey courses and courses related to a specific area of concentration. Most of these courses are taught in lecture format, complemented with seminars, discussions and laboratories. The teaching is done by a professor. Students read assigned texts, write papers, perform experiments and take examinations (Duderstadt, 2000).

New interactive resources provided by information technology are likely to challenge this model and change the roles of the professor and the student (Ernst & Young, 2012). The reality of more diverse students requires new educational approaches. Undergraduate and graduate education is being rethought and/or reorganized (Duderstadt, 2000). Faculty members will become coaches, advisors and designers of the learning experience, including both the processes and the environments in order to develop their conception of students-centred learning. Curricula and course content have to be adapted and evaluation processes have to be reviewed in accordance to new teaching and learning concepts. Students will become active learners, responsible for their own learning and outcomes (Kallenberg A.J. et al., 2000).

One technique teachers will have to learn, is the use of learning contracts. Jarvis (2003, p. 105) points out that learning contracts can be seen as a mechanism "for introducing a measure of order and predictability" in a fast changing world that is unpredictable and risky because it is organised on a competitive basis. The use of "contracts" in learning processes originated from self-directed learning. Knowles (1986), an influential North-American writer on adult education, introduced the concept of a learning plan as a basis for self directed learning. It has now become common practice in many types of education (including adult education, higher education, professional education, and training).

According to Menand (2010, p. 19), an urgent pedagogical challenge is "the problem of adapting a linear model for transmitting knowledge (the lecture monologue), to a generation of students who are accustomed to dealing with multiple information streams" in short periods of time.

As mentioned above, many professors are not trained for teaching and know little about modern ideas on student learning processes, whereas most of them have been trained for research. Duderstadt (2000, p. 97) states that "the process of graduate education is highly effective in preparing students whose careers will focus on academic research". He acknowledges that, due to the highly specialized form of graduate education, graduates are not always well prepared for teaching and work outside academia (Duderstadt, 2000, pp. 90-91). Since many Ph D students will find work outside academia, the European University Association started a programme about rethinking and reorganising doctoral education and preparing Ph D's for broader roles (Council for Doctoral Education, EUA). Some PhD students undertake collaborative research with companies in which mutual learning between the company and the university takes place (Borrell-Damian, 2009).

In several countries (e.g. Flanders (B), UK), HEIs take the initiative to set up teacher training. Based on a literature review, Gibbs and Coffey (2004, p. 88) conclude that "there is little evidence regarding the impact of training on teaching and even less evidence of impact on student learning". Their own study (Gibbs, Coffey, 2004, p. 98), involving 22 universities in 8 countries, concludes that training can change the extent to which teachers adopt a student focus and improve aspects of their teaching, leading to an improvement of the quality of the learning of their students. They suggest that without the support of training, teachers would go in the opposite direction and rather not adopt a student focus. This rather, negative conclusions on the impact of the lack of training need to be explained. Gibbs and Goffey

(2004) observe that it is important to involve teachers in the training in order to have a positive effect on their teaching. They mention that teacher-trainees reported that teaching was often not valued in their departments. Pressure to conform to "teacher-focused conventions, such as didactic lecturing and testing of acquisition of the content", existed in the departments. A change in teaching methods (more student-focused) was being criticized by more experienced colleagues (Gibbs, Goffey, 2004, p. 98). However, training projects are not always a success since they are adding to the tasks of active professors or disturbing the routine of others: "staff development? I haven't got time for that" (Bolton, 2000, pp. 84-85).

While some higher education institutions are changing their focus from a "faculty-centred" to a "student-centred" approach, new providers in the higher education sector are mainly focusing on learning services. Delivering teaching in a non-conventional way by focusing on student-centred learning seems difficult at traditional universities. In most traditional universities, there are insufficient financial means to train professors properly in new pedagogical processes and the use of new pedagogical tools. Spending on teaching slowed down in many places (USA, UK) or was insufficient to cover the costs of introducing new ways of teaching and learning. For instance, Geiger and Heller from Pennsylvania State University (USA), say "that since 1990, in both public and private colleges, expenditures on instruction have risen more slowly than in any other category of spending, even as student numbers have risen" (The Economist, 2012, pp. 49-50). Professors have to teach more students with less means and very little training. Biggs (1999, p. 5) argues that it is short-sighted to downsize staff development units in order to save costs. He observes that it may be important to first change the views of teachers (from teacher-centred to student-centred) on teaching before inviting them to workshops to change their teacher behaviour (Biggs, 1999, p. 230). However, from his analysis of the literature in this domain, Biggs (1999, p. 231) inferred that changing behaviour first and letting beliefs follow, or paying attention to both aspects at the same time, may also work.

Besides these staff training issues, there are also incentive problems. Most professors live within a context where published research continues to be emphasized, and are concerned with this activity since it is rewarded in funding and in the promotion system. The active engagement of professors in this domain is not rewarded in the same way compared with highly valued research sponsored by corporations and other third party sponsors. Teachers are also more controlled in their educational work since the quality movement in education set up accreditation procedures for educational programmes, raising important issues of academic

freedom. A balance between autonomy as an expert and accountability with regard to their obligations according to quality procedures has to be found (Finnegan, 1997). As mentioned in the previous section 2.4.4, teaching philosophies such as constructivism do not exclude the value of expert knowledge, but it requires that the expert takes on the role of a 'guide'. De Wolf (2001) points out that respected experts in a particular field are not always good teachers. The role of the expert will have to change if the learner is to play a more active role. Guri-Rosenblit (2009, pp. 58-62) emphasizes the continuing importance of expert teachers for constructing meaningful and valid knowledge, both in face-to-face and distant and online environments.

The establishment of systems for the assessment of academics for their teaching has been a rapidly expanding business in recent years. However, too much external control, and the increasing imposition of administrative tasks that goes with it, are de-motivating for the academics. In my experience, assessment should not be based on uniform schemes as is the case in some HEIs. It is context dependent. The ultimate aim cannot be to get a ranking of "star teachers", but it should be improving and developing the capacities of teaching and coaching (High Level Group on the modernisation of higher education, 2013).

Peer review of teaching is being developed in some parts of higher education in the USA and the UK. Peer observation of teaching is common in the UK. However, peer based reviews may have little impact on the pedagogical strategies of teachers. Educational processes and methods should be communicated like research methods and results in order to share experience and good practices. Support networks for learning and teaching can play an important role (Blackwell and Blackmore, 2003; De Corte, 2003). The role of the educational development centre is being explored. Such centres provide educational and professional staff development for higher education through staff development courses (Johnson, 1994).

ICT plays an important role in the set up of student centred systems. The presumed lack of "research" in these new systems delivering teaching and learning services, makes them somewhat less robust in the eyes of traditional institutions. There is therefore a need for research to look in depth at a HEI with a strong student focus and to see how they organise the learning and teaching of the student, and how they combine it with a research mission. There is a need for more research on combining teaching and research missions where the needs of the student learner and the academic researchers might become more interwoven.

2.5.   Conclusions

From the literature discussed in this chapter, I conclude with the following insights:

- Underlying cultures and different perspectives on academic values may retard changes in universities.

- There is, a rather recent, cultural heritage, which is professor-centred and has a focus on scholarship, including research.

- Traditionally, the disciplines determine the way research and teaching takes place. External factors are influencing the disciplines. New demands are put on teaching and learning.

- Among the external factors are the societal demands for economic benefits and commercial interest. New concepts of research arise (mode 1 and mode 2).

- Contemporary academia is confronted with pressures for performance (rankings, assessments) and its consequences for the behaviour of researchers and university managers.

- Besides the focus on research, there is also a focus on teaching and learning and on the relationship with the student. Pressures for performance come from the knowledge society, the labour market and the Bologna reforms.

- In a knowledge society, lifelong learning becomes important. Lifelong learning strategies are necessary to keep up with the demands of the knowledge society and to build an inclusive society.

- Lifelong learning gives rise to a changing student concept with its implications for a student-centred approach taking into account the different learning needs of diverse student groups.

- The labour market, more specifically the large employers, requires other abilities than purely academic skills and competences are. For academics it is important to deliver research-based teaching.

- Pedagogical principles focussing on the learning of the student are slowly being implemented. A student-centred approach requires an organisational response to integrate this teaching and learning philosophy in the organisation.

- The role of the professor is changing. This is difficult and it will take time because the professors have been educated by the practice in their discipline.

The many issues discussed in this chapter evolve around two fundamental concerns:

- Traditional higher education institutions are still mainly professor - or faculty-driven and focused on research. Research is to be seen as a way of knowledge production in a competitive environment. The researcher, who wants to pursue curiosity-driven research and experiences a reduction of his academic freedom, seems no longer to be supported by the society, which wants solutions for contemporary problems or results, which can be commercialized.

- Teaching is necessary in a fast-changing world with many societal demands. The culture is slowly moving towards more learning or demand-driven. In Europe this is enforced by the Bologna reforms. The slowly moving culture conflicts with the societal demand for putting the learning of the student at the centre.

Tensions are becoming more intense because universities are confronted with all kinds of management foci. In respect of teaching and research, Barnett argues that teaching and research have become "rival ideologies". Research turns into an epistemological enterprise of knowledge production while teaching becomes a more ontological enterprise, promoting a certain kind of human being ("a good citizen"), educated towards professional responsibility. Each "enterprise" has set up its own system. The ideologies of research and teaching are damaging the university.

One of the underlying issues which comes out of this enquiry is that these ideologies are related to conflicting demands from the knowledge society, which expects excellence (for some) on the one hand and equity (for all) on the other hand. The latter is more related to teaching and the former to research.

For Barnett (2003, p 131), there is still time to replace the pernicious ideologies that are tearing the university apart with approaches that are based on ideals that are imbedded in universities such as an open communicative structure based on universal values of community, dialogue and respect for persons on campus.

In research as well as in teaching, immediate economic benefits can play a role. It is difficult to avoid the conclusion that there are no means to carry out both research and teaching in an efficient and effective way; tradeoffs are inevitable. If our physical and social environment

asks for more interdisciplinary and multidisciplinary knowledge, ways have to be found to organize our education in an appropriate way and create the infrastructure that supports such knowledge acquisition. The problems or even tensions that follow from these issues require ongoing management that will be the subject of my empirical research.

Given a concern for knowledge acquisition and dissemination, intelligent investment and use of ICT, with attendant implications for organisational and working practices, is an obvious topic of enquiry.

3. Roles for ICT

In chapters 1 and 2, I indicated that there is a role for ICT in the renewal of the organisational model of universities. In this chapter, I provide an overview and elaborate on some key topics related to ICT that warrant further attention.

I discuss the possibilities for strategic renewal of universities through ICT in **section 3.1**., below. In section 1.1., I indicated that mature industries such as traditional higher education can be rejuvenated through the implementation of new concepts in teaching and learning and research and new ways of organising. In section 2.4.2, I mentioned proposals for new university models, which imply the use of digital delivery of educational services.

In **section 3.2**., I elaborate on the conflicted attitude towards ICT. Although many HEIs already integrate e-learning in their teaching and learning methodology, it remains a complex issue because of the organisational and individual implications. In sections 1.2. and 2.4.1., I already mentioned the needs of the knowledge society for lifelong learning. Besides standardisation of education in order to reach a broader public in a more effective way, there is also a need for more customisation in education for specific groups in society. The changing student concept and its implications, which I discussed in section 2.4.2., leads to demands for adapted teaching and learning methodologies. A change in attitude is necessary in order to adapt to the different needs of the learners. Integration of ICT in the teaching and learning process could bring some benefits.

In **section 3.3**., I highlight the potential for restructuring academia through ICT based on the observations (section 1.1.) that digital communication and learning technologies are challenging existing traditionally organised universities. I indicate the role of

technology in the knowledge society and the need for digital literacy, which has also an impact on the strategy of traditional HEIs, as mentioned in section 2.4.1..

In **section 3.4**., I explain why the discussion about the physical campus, an important feature of traditional universities, may become obsolete. The community aspect of a physical campus is considered important because it allows for physical interaction between students and staff. In section 2.4.4., I indicated that the importance of learning communities is also acknowledged in e-learning.

In **section 3.5**., I elaborate on the possibilities of using ICT for widening access, which is part of the lifelong learning philosophy as indicated in section 2.4.1.

In the final **section 3.6.**, I discuss the issues related to equipment, attitudes and performance because barriers examined can prevent renewal within organisations (as indicated in sections 1.1. and 2.1.). Several factors (e.g. academic cultures, reduced financial support) can create obstacles in the further development of ICT implementation. Digital literacy can only become widespread if equipment is available. Faculty development will be necessary to explore interactive distance and on-site digital technology in order to lead to a better performance of staff and students (as mentioned in section 2.4.5.).

3.1.   Strategic rejuvenation via ICT

Technology has allowed many businesses to rejuvenate. As Castells (1999, p. 49) points out: "The strategic character of information technologies in the productivity of the economy and in the efficacy of social institutions changes the sources of power within society and among societies". The organisations, which manage technological change most effectively, will be in a position to reap the benefits and have a broader impact on society.

Some mature industries are able to rejuvenate themselves when they are able to come up with new strategies (besides new products and services). Firms in mature industries, which are being deregulated or are going through a technological shock, are able to survive and rejuvenate themselves or else are faced with extinction. Developments in ICT have been able to give an impetus to many businesses. Porter (1980) has defined specific forces that reshape an industry: the threat of entry to an industry by new organisations, the bargaining power of suppliers (e.g. students), the bargaining power of customers (e.g. employers, funding sources) and the threat of substitute services. Peterson and Dill (1997, p. 7) have added a fifth force to Porter's model (1980) to reflect on the transformation taking place in teaching and research through technology: technical innovation in the core processes of the industry. They (Peterson, Dill, 1997, p. 13) wonder if ICT will lead to the reinvention of how students learn and faculty teach and learn or if it will be just a technical mean supplementing teaching and learning. Peterson and Dill (1997, p. 13) also mention the extent to which ICT applications are being used in different areas of society beyond the campus, its potential for use without few constraints of time and location and increased possibilities to acquire more powerful technology.

By reducing barriers of space and time, ICT allows information to be widely and rapidly distributed. It leads to new opportunities for business and also for education. The traditional campus is no longer limited by barriers of space and time. However, the use of technology

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alone is not enough to rejuvenate a mature business. Also, in education, rejuvenation should be based on strategies; technology can be a means for restructuring the model of instruction often based on a contact-hour lecture between the instructor and the student, if underlying models and processes are rethought and redesigned (Graves et al., 1997, pp. 432-452). According to Graves, restructuring instruction requires an understanding of:

- the difficulties caused by linking new technologies with traditional instruction models;

- the barriers to faculty adoption of new technologies in instruction;

- financial strategies for coping with the transition and

- the planning strategies for integrating technology into the organisation.

Therefore, the blind adaptation of an ICT driven process re-engineering, without an adequate strategic vision and commitment from the entire organisation, risks only compromising the quality of students' learning because of a lack of an underlying pedagogical strategy and may create alienation and resistance from faculty and students asked to use ICT without sufficient support, rather than improving the performance of the instruction.

ICT changes the way teaching, learning and research can be carried out. ICT changes the way that HEIs compete with each other for students, and compete or co-operate with companies to deliver their educational products. At the institutional level, ICT changes the teaching-learning process: the nature of the faculty role, the student-faculty relationship and the course or the class room (Peterson, Dill, 1997, pp. 13-14).

The ICT revolution makes it possible to find an answer to most of the societal conditions affecting the higher education industry (diversity, quality, lifelong learning and globalization, and the revolution intensifies all the other forces (mentioned higher) acting upon the industry (Peterson, Dill, 1997, p. 21). ICT enables the development, the transmission and the dissemination of knowledge in society. HEIs are no longer the only organisations involved in the knowledge industry. New organisations in the educational sector and from the telecommunications and media industry are entering the sector. Students as learners are not only looking for regular courses and degrees through traditional channels of delivery but also for non degree learning and non traditional modes of delivery. The power of new organisational entrants is increasing. They are able to offer substitute educational services (Peterson, Dill, 1997, p. 23).

3.2. Conflicted "attitudes" to ICT

Although some universities adopt e-learning strategies on campus or for their distance education programmes, some academics question the relative importance and the value of e-learning strategies. Zemsky and Massy (2004a) mention four areas where digital technologies are being used by academics: for course enhancement of traditional courses, for course management, to import course objects such as a video presentation or a simulation and for new courses, which take full advantage of new technologies because they are based on a dominant design for the learning objects that are the building blocks of the e-learning course (Zemsky and Massy, 2004a). Such a design makes it possible to create building blocks, makes them interchangeable and makes it possible to link them with one another. Guri-Rosenblit (2009, p.132) asserts on the basis of her research in traditional research universities, that although academics use ICT for their research, they are rather hesitant to use it in their teaching because this would require them to take up new responsibilities for which they have not been prepared during their socialization process into academia. The Cooke report (2008, p. 11, 3.14) mentions that many staff are not able to learn new skills (unlike their students) because they do not have the necessary skills to use the internet and do not fully exploit the potential of virtual learning environments.

E-learning strategies are mostly seen as a technical tool to complement classical face-to-face teaching. For example, Zemsky and Massy (2004a) report that more than 60 % of faculty members use e-learning to enhance traditional courses (e.g. by e-mail communication). In many universities the students have access to learning materials on the internet. They are linked to virtual learning environments (such as BlackBoard) often to manage their learning process (e.g. schedules of courses, exams or slides used during lectures are made available on line).

The Cooke report (Cooke, 2008, p. 11, 3.14) states that this easy access to content does not mean that students are well trained in the traditional skills of finding and using information and in "learning how to learn" in a technological environment, which gives access to information and networks. According to Zemsky and Massy (2004 a, b) early adopters of e-learning also lacked the knowledge of what students liked about e-learning. They found out that being connected, being entertained and being able to make a great presentation were important, except for engineering students, who were considering e -learning more as another method for problem solving.

Attitudes about the use of e-learning remain "conflicted" because of doubts about the quality of learning outcomes, a lack of institutional support and institutional reward systems (Babson Survey Group and Higher Ed, 2012). According to Finnegan (1997, pp. 494, 495, 497), faculty and administrators must explore and adopt new interactive distance and on-site digital technology systems and should be rewarded for it. Duderstadt (2000, p. 108) observes that universities played leading roles in developing the information technology that is transforming society, but that they have been slow to adapt it to their own educational activities. He also states that academics are inclined to reject scholarship or technology aimed at improving learning because it might threaten familiar pedagogical paradigms. Zemsky and Massy (2004 a, b,) studied the reasons for this lack of application of technology for transforming teaching and learning. They argue that it was confusing for professors to use a wide range of untested e-learning tools on a regular basis. They also suggest that faculty members did not believe they had to change their way of instruction.

According to the report of the The Babson Survey Research Group and Inside Higher Ed, 2012, faculty members have a rather pessimistic view about online learning, based on scepticism about the learning outcomes, except if they have been involved in online education or if they have direct online teaching experience. Administrators have a rather optimistic view: "more excitement than fear" (The Babson Survey Research Group and Inside Higher Ed, 2012, p. 2)

Several studies (Cooke, 2008, p. 13, 3.22 and p. 15, 3.28; Guri-Rosenblit, 2009, pp. 110-112, Chester, 2010[11]) describe negative experiences with ICT use (in education and administration) in traditional universities, as it often results in more work for the professors[12] and a confrontation with inflexible technology barriers without appropriate processes to support the use of technology; all this in the face of significant investment costs. For example, Chester (2010) mentions the significant investment of US $ 10 million in the case of the Global Campus of Illinois. Access and equity for a more diversified student population are not ensured in traditional universities using e-learning (Guri-Rosenblit, 2009, pp. 50-51; see also

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[11]   Chester (2010), Vice Provost and Chief Information Officer of Pepperdine University (Cal., USA), mentions the Global Campus of the University of Illinois, which announced it would close on December 31, 2009 (after opening in 2007) and the closure of the consortium of colleges and universities in Utah in June 2009.

[12]   Or for the teaching assistants (Osterlund and Robson, 2009)

section 3.5.). Quality assurance of e-learning courses and of the e-learning experience is still causing concern among faculty members teaching online courses (Allen, Seaman with The Babson Survey Research Group and Inside Higher Ed, 2012).

The lack of capacity for change due to insufficient insight in the strategic role of technology at senior management level, together with human resource issues, rather than technological issues, causes difficulties (Duke, Jordan, Powell, 2008). The Cooke report (Cooke, 2008, p. 13, 3.22) asserts that ICT innovation requires more time and financial means to develop the necessary structures, support processes and adapted curricula. Decreasing staff/student ratios made these problems worse. By providing open access, no-cost online access, to learning resources which are freely available on the internet (Cooke, 2008, pp.14-17) these problems could be compensated.

Some literature on universities and ICT use criticises the focus on new technologies and regrets the loss of traditional university values. For example, Reed and Deem (2002, p. 137) argue that the use of new technologies may increase the "new managerialism" in universities since: "it is likely that computerized information will be increasingly used as a management tool". They seem to forget that management also has its positive side especially in times when governments are asking for more accountability from HEIs (see section 1.1.3.). "New managerialism" refers to practices from the private sector being used in HEIs. It consists of a strong management, tight control and efficiency and external accountability and monitoring. Reed and Deem (2002, p.144) also fear that it may restrict the professional skills and knowledge of university staff if the organisation carries out an increased control of the academic labour, which will impede them to reflect on innovative ways to introduce new methods of teaching and learning in higher education.

The fear of developments of (technology driven) "commoditisation" of higher education often adds to this pessimistic view, as expressed by Gabriel and Sturdy (2002). They fear that course content could become standardised if used for distribution by new technologies and that the quality of the learning content could be compromised by this standardisation process. Benson and Harkavy (2002) realise that the development of information societies throughout the world makes education (schooling) important and that HEIs have a role to play. They focus on the question what is to be done to resist and overcome "commodification" of HEIs, which leads to competition and globalisation and started already before the "virtual university" based on ICT developed in the 1980s and 1990s (Benson and Harkavy, 2002, p.

190). They are trying to promote democratic citizenship and civic engagement in their local communities. Therefore they propose a long-term, locally-oriented, practical strategy to unite academics opposed to "commoditisation" (Benson and Harkavy, 2002, p. 209). This strategy should contribute to reinventing the schooling system in their communities by using the HEIs resources for its improvement. Agre (2002) proposes to manage the tension between the commodity model and the community model. In the former, the university is a competitor in the market place with educational services as the principal commodity, besides intellectual property based on research. In the latter, the university is seen as "an idealized microcosm of society, reflecting the tensions and controversies of the larger society" (Agre, 2002, pp. 210-212). According to Agre (2002, pp. 217, 219), ICT can play a role in both models and make existing academic communities stronger for instance by linking academic disciplines in different universities or by creating university networks throughout the world.

Resistance to change is largely caused by the overload experienced by academics and students, or by the lack of understanding of the potential new model. Many academics combining teaching and research perceive the use of ICT as adding to their work load and lack the motivation (and the rewards) to integrate ICT in their teaching. Some students also are afraid it will increase their workload and decrease possibilities for personal contact (see section 3. 4., the importance of the physical campus). Innovative responses will have to be developed in order to avoid this perceived decline in the quality of faculty work and life, and of student learning (Marcy, Lieberman 2003).

An innovative proposal can be found in the following interview[13] with Bates, previously the Director of Distance Education and Technology in the Continuing Studies Department at the University of British Columbia (Canada), and, for a few years (2003-2006), part-time Professor at UOC, Chair or research in e-learning. He observes:

> *"… in a research university professors try to keep the teaching to the minimum in order to spend more time on research. For them ICT should be used in such a way as to reduce the time spent on teaching. It will only happen if courses are completely redesigned and fully exploiting the technology. This requires a time commitment from*

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[13]   Sagarra, D. (2004). Interview with Tony Bates, Professor at the Universitat Oberta de Catalunya: "E-learning should be used strategically and not just as a tool that every body uses", 30 December 2004. http://www.elearningeuropa.info/directory/index.php?doc_id=5943&doclng=6&page=... (September 21, 2009)

the professor, which he is not likely to make if he is not rewarded for it and if there is no support to carry it out. Therefore traditional universities, who are highly committed to research, would benefit from a different configuration of faculty and department roles. They often lack the pedagogical training to rethink their teaching and (pedagogical) training would take time away from their research. Working in a team would be the best way to develop e-learning but it would be unacceptable for many professors in traditional universities."

Many traditional universities are trying to develop a link between ICT and their mission (Graves et al, 1997). There is still a potential for the transformation of research, teaching and learning by ICT. The Cooke report (2008, p. 8, 2.4.[14]) mentions several existing national ICT-related learning and teaching strategies within the UK which stress the importance of innovation. The report also mentions that despite the fact that all institutions have ICT or even ICT strategies, there "appears to be a lack of vision in exploiting the ICT infrastructure provided" (Cooke, 2008, p. 8, 2.5.). The report claims that new capabilities in library services are not enough identified and exploited. It also mentions the often inadequate links between strategies for research or learning and teaching with those for ICT (Cooke, 2008, p. 8, 2.5.). IT is seen as a technical tool. It is not fully integrated in the activities of the organisation and is not yet transforming the processes. This stage requires a strategic understanding of the core process of teaching, learning and research and of the technology (Graves et al., 1997).

By eliminating the barriers of space and time, ICT allows for information to be widely distributed. It leads to new opportunities for education. Technology changes the pedagogical project (Gergen, 1995; Bradshaw, 2010). The relationship of learners with technology is changing fundamentally and has an impact on their expectations and experience of education (Sharpe et al., 2010, p. 1). The scepticism often expressed about ICT because of the lack of possibilities for socializing has been taken away because collaborative learning now allows for meeting this need in different ways. ICT only seems to disturb the traditional disciplinary culture of classroom teaching. ICT use does not mean that other forms of learning are excluded such as for instance blended learning, which is used as a general term to indicate the

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[14] The Cooke report (2008, p 8, footnote 4) mentions that 23 strategies were identified in the UK Higher and Further Education Funding Councils' Funding Advice Letter to JISC for 2008-2009 AY which can be found at http://www.jisc.ac.uk/aboutus/whoweare.aspx

combination of technology and more traditional learning methods such as classroom instruction and seems to fit the needs of many learners and more traditional institutions.

ICT provides access to information which is different from knowledge. Knowledge needs to be constructed. The roles of the actors in the traditional educational world, the professor and the student, need to be reinvented in the new technological environments. Through the new ICT, it is now possible to design new study environments for on-campus as well as for off-campus students. In traditional universities, the on-line tools usually support and augment face-to-face teaching and learning processes.

3.3.   Potential for restructuring academia

Problems arise when traditional universities, wanting to fulfil multiple missions, introduce ICT as a means to better fulfil their teaching and learning mission without pedagogical strategy and insufficient support. Based upon my knowledge and experience, campus universities already have to deal with many problems, and could benefit from the applications of ICT embedded in pedagogical principles. Graves et al. (1997, pp. 434-435) argue that in order to link instruction and ICT in a successful way it is necessary to understand: what is missing in the current instructional model; what the characteristics of various learning technologies are; and what the possible strategies for transforming learning and teaching could be.

In universities, ICT is being used as an administrative tool, for research purposes and as a pedagogical tool on campus or in distance education programmes. Many higher education institutions have invested in ICT, but are not using it as part of an integrated strategy to reinvent their organisational model because they consider ICT as an operational enabler, supporting the core activities of the university (Duke, Jordan, Powell, 2008). In the UK, the Cooke report stated in the introduction (Cooke, 2008, p. 7, 2.1.): "ICT is not always considered strategically by senior management against the business needs of the institution".

During its 2008 conference the European Association for Distance Teaching Universities discussed how virtual networks could enhance education. It looked at projects that could network learners (such as virtual Erasmus), network knowledge (with the help of open educational resources), network across the working life (virtual entrepreneurship and remote internships) and network quality (to be made part of internal and external quality systems). It

also looked at new business models for higher education institutions (conventional, open and distance) to organise such networks and to find innovative solutions (Vincent, 2008).

Thanks to ICT developments, e-learning can now also be integrated in so called "distance education", which has been used for a long time for special needs groups. However, it is questionable whether e-learning and distance education are the same thing. Some would deny this (Guri-Rosenblit, 2003, 2009). According to Guri-Rosenblit (2003), higher education institutions which take advantage from using ICT, such as the traditional "distance education" institutions, are not always well equipped to explore their possibilities in the domain of delivering courses through ICT. Most of them lack the proper infrastructure and human capital to use the new technologies to their full potential. She also claims that elite research universities, which are relatively newcomers in the field of distance education, are, in fact, better equipped to realize the ICT possibilities because they can afford the infrastructure needed for e-learning and the costs for maintaining the infrastructure and setting up support systems. Scholars in the field of distance education identify ICT as the third generation of distance education, after correspondence teaching and multi-media teaching (Guri-Rosenblit, 2003, p. 7).

A study for the UK Joint Information Services Committee (JISC) about how and why senior leaders do or do not integrate technology into institutional strategies of HEI's (Duke, Jordan, Powell, 2008), found out that most members of senior management teams (SMT) lack a deep understanding of technology. They rely on the collaboration of ICT staff with complementary skills (often obtained outside the HE sector) to deliver the contribution of technology to the strategic goals of the HEI. It is not clear if leaders understand what technology can or cannot deliver.

The 2008 JISC study identified two fundamental models of ICT strategy processes, the integrated and the disjoint model. The former encourages a parallel process of development of sub-strategies for functional areas and academic units to support and deliver the institutional strategy. The latter - the most common in HEI - allows local strategies to emerge, often in complex ways, within the organisational boundaries. Little evidence was found that technology played a transformational role in recasting the HEI in a different form (changing the processes). Some evidence was found of its use as a strategic enabler needed to implement the strategic goals set by senior management. The study concluded that technology was mostly used as an operational enabler.

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Although not the only driver, ICT is a significant driver of the restructuring of academia. For decades, the literature has discussed educational structures for the future based on ICT possibilities linking students and faculty to extensive data sources via computer applications integrating information, sound and video images (Peterson and Dill, 1997, pp. 13 -14 and p. 21; Heydinger, 1997, pp. 106-123; Fink, 1997, pp. 319-339). ICT companies are creating and supplying information-handling tools. HEIs are becoming increasingly dependent on their former clients (Peterson and Dill, 1997, p. 14). The new technologies have the possibility to change traditional ways of teaching and learning and to challenge the traditional role of the faculty by "shifting the traditional contact-hour-lecture model of instruction to technology-mediated models" (Graves et al., 1997, p. 434). Such models bring new demands to the faculty. They have to be willing to understand the technology and accept management support for ICT. As before, they need an understanding of the subject matter and the learning processes because they have to guide the student in his or her own learning process (Graves et al., 1997, pp. 440-441).

E-learning makes it possible to construct knowledge and to participate in collaborative learning. However, this is not yet occurring in many universities. The new technologies have an impact on many administrative and support tasks, on research and teaching activities. Cornford and Pollock (2003, p. 22) looked at the issues that arise during the building and implementation of ICT projects in established universities. They concluded that implementing ICTs is a complex process because it leads to changes in the social, spatial, temporal and technical division of labour, which eventually require new organizational practices and structures (Cornford, Pollock, 2003). The redesign of conventional processes and practices of universities is difficult to conceive for traditional institutions, "which remain committed to many established structures, identities and relationships, despite pressures to change" (Cornford, Pollock, 2003, pp. 111-112).

Guri-Rosenblit (2009, pp. 10-11) notes that, in a study of the National Academies of the USA on the implications of the information technologies for the future of the nation's research universities (National Research Council, 2002), the panel members concluded that the impact of ICT would be "profound, rapid and continuous". It would not only change the teaching, learning and research, but also the organisation, the financing and the governance of the university. For these researchers, the campus would continue to play a central role as a "geographically concentrated community of scholars and as a centre of culture" (Guri-Rosenblit, 2009, pp. 10-11). The impact of ICT on the operations of the university and on the

way knowledge is being generated would grow but within the settings of campus-based universities.

A recent report (Kinser and Green, 2009) on the power of partnerships is based on the Transatlantic Dialogue which took place in June 2008 with higher education presidents, rectors and vice-chancellors from the United States, Canada and Europe. The partners in the transatlantic dialogue initiative have been having a serious impact on current higher education issues since 1989 by influencing each other higher education systems. In the introduction to the 2009 report, Kinser and Green (2009, introduction, vi-vii) reflect on the earlier 2001 Transatlantic Dialogue, during which it was predicted that the forces of competition, technology and globalization would be the drivers of change (Green, Eckel, Barblan, 2002). Kinser and Green (2009) concluded that, with regard to technology, the partners in the dialogue agreed that it created profound change in higher education. However, some partners were not convinced that it really transformed the core operations or pedagogy of higher education institutions. According to the President of the University of British Columbia, Stephen Toope, "people" and not technological tools, were seen as the real drivers of change.

Although some academics consider the value of e-learning strategies overrated (see section 3.2.), many traditional universities still consider ICT as the way of the future since more effective systems for financing and delivering learning services have to be found. It has been argued that American universities, driven by the need to compete in university league tables, have been spending beyond their means by taking on too much debt (The Economist, 2012). Although most HEIs have been forced to raise tuition fees, Geiger and Heller of Pennsylvania State University claim that since 1990, expenditures on instruction have risen slower than those on administration and support services despite the rise in student numbers in private and public colleges (The Economist, 2012).The public is concerned about the costs and the availability of higher education. HEIs are looking for ways to control the costs and increase productivity (Duderstadt, 2000, p. 322). Some universities see ICT as an opportunity for the university to overcome the boundaries of the campus and enter into the global higher education market.

In a report, submitted to the Rt Hon John Denham MP, Secretary of State for Innovation, Universities and Skills in the UK, Professor Sir Ron Cooke (2008) gives recommendations for improving on-line innovation in higher education in the UK intended to ensure that the UK continues to play a leading role internationally in the ICT world. He states that ICT

infrastructure in higher education institutions needs to be sufficiently exploited in the UK if the country is to stay at the forefront in research, teaching and learning. This applies to campus delivery as well as to distance delivery. One recommendation in the report is that all UK institutions should develop a vision about how to better exploit their ICT- infrastructure and combine different capabilities, such as developments in library services as well as linking strategies for research and learning, and for teaching with ICT possibilities.

3.4. The importance of the (physical) campus

A physical campus is an important feature of traditional universities. The community aspect of a physical campus is considered important since it allows for physical interaction between students and staff. A key issue that warrants further exploration is how learning communities on the web can also lead to interactive and participatory experiences and to new ways of learning. Another issue that will be explored is the growing interaction between physical spaces and virtual spaces.

The physical campus is often assumed to lead to a community experience useful for teaching, research and extra-curricular experiences. By contrast, ICT use is assumed to be an individual experience, which can take place anywhere at any time. From this perspective, the need for a conventional physical campus seems much reduced. Nevertheless investments in the expansion of campuses, together with the expansion of campus services continue. These expensive investments often create significant commercial interests (such as shops and sports facilities on campus; see also below).

The classic classroom paradigm usually means a one-way flow from the teacher to the student, complemented with a solitary learning experience of reading and writing (Duderstadt, 2000, pp. 84-85). This experience can be augmented by living in a real world campus where interaction is possible (in theory) with many other people. Learning communities can be formed through formal academic programs and through social, extracurricular and cultural activities. Therefore, Cornford and Pollock (2003, p. 38) emphasize the importance of finding new ways of providing support that a campus setting gives, in a distributed education context. Cornford and Pollock (2003, p. 19) point out that "actor network theorists have argued for an approach that brings together and treats in a symmetrical way the social and the technical". According to them, actor network theorists have developed the notion of an "actor network", which refers to the relationships people have with each other but also with non-human actors and entities. Cornford and Pollock (2003, p 42) apply concepts from actor's network theory in

order to reflect on online education. In their view, online education can be seen as the construction of a new actor network: the binding of people (lecturers, authors, technicians, librarians, graphic artists, publishers, assessment experts, administrators and students), texts (textbooks, course lists, exam papers), machines and other physical objects (computers, offices, telecommunication network). In order to have the advantages of a real campus, lateral interaction between the "the actors" is necessary on the web.

A strong residential component for undergraduates is considered important (Duderstadt, 2000, p. 281). The traditional forms of pedagogy, such as through the class room, are considered useful in this first step towards lifelong learning with the purpose of finding a place to work (Duderstadt, 2000, pp. 81-87). Very different forms of undergraduate education were explored in the 1960s (Duderstadt, 2000, p. 81). However, new technologies are making new educational approaches possible.

Virtual universities, which provide learning online, are creating a campus on the web and are changing radically the way teaching and learning takes place. Campuses on the web are integrating the new interactive possibilities of ICT. The classroom on the web allows for complex interactions and for collaborative learning in learning communities on the web. Learning communities on the web are now seriously studied (e.g. Garrido, 2003). In the context of web 2.0 technology, which leads to interactive and participatory experiences, the "community of scholars" gets a whole new meaning. It becomes difficult to use the "community" argument in order to defend traditional campuses and further opportunities arise for new ways of learning.

The introduction of a new form of ICT, the 3D online world, Second life, led to both positive and negative discourses at Hong-Kong (HK) Polytechnic University, emphasising either the many benefits of this new technology as a great teaching and learning tool, or the negative impact, it has on the lives of the users since the use of this new form of ICT is presumed to lead to unavoidable consequences, such as an increase in cases of internet addiction (Herold, 2012, pp. 2, 9-10). Used as a tool for simulation second life has the ability to prepare for similar real-world experiences. Second life is also often criticised because it allows users to abuse their knowledge of the virtual world to harm others (Herold, 2012, p 8). According to Twinning (2009, p. 512) this ICT provides "radical different models of education", which will lead to better teaching and learning environments. Besides Second life, with an average user age of 36 years, other choices for educators exists such as the virtual environments created by

IMVU (a graphic 3D –instant messenger) or Dofus (a 3D massively multiplayer online role-playing game) with an average age of 22 years (Herold, 2012, p. 9).

Social network sites (SNSs), such as facebook, cater to a diverse audience and "offer web-based services that allow users to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system" (Boyd, Ellison, 2007, p. 2/19). Features and user base vary except for profiles, friends, comments and private messaging. Facebook expanded from a college network (Harvard University) to include eventually everyone.

One can wonder if campus teaching is really a community experience and ICT really an individual experience. Physical campus teaching has still not been replaced by the virtual classroom. As indicated above, one of the classic features of the traditional university is the campus. A conventional university campus has classrooms, libraries, laboratories and lecture rooms. The campus model arose out of the need to group the intellectual resources such as the library (Fink, 1997, p. 326). Throughout the history of universities, the campus has been important, although there are different types of campuses (i.e. city campuses, multi-campuses, secluded campuses).

Tensions exist between campus teaching, which enables the creation of academic communities, and ICT- supported teaching, not necessarily undertaken on campus, but where, according to some, it seems more difficult to create a community. ICT-supported teaching is still seen as less valuable than face-to-face teaching although this perception is changing (Bradshaw, 2012). ICT offers the opportunity to reach a more diverse student population (working students, students who are geographically remote, students with a dysfunction). The physical campus is seen as a place where learning can take place in a community. Farrington (1998) considers a campus education as a valuable opportunity for young people in the developmental phase of their life. Light (2001) and Tchibozo (2007) argue that young people seem to learn many important competences and skills from participating in extra-curricular activities.

Some claim that the use of technology will remain on the margins of academic activities and that it is doubtful that it will change in any profound way the dominant campus cultures (Guri-Rosenblit, 2009). Often ICT is merely seen as a new pedagogical tool rather than as part of a strategy to change the organisational model. In some countries (e.g. Canada, USA,

UK), so called "dual mode" universities, are implementing strategies to reach another market segment by a different distribution channel. They deliver both on campus face-to-face and distance ICT teaching and learning. Recent developments seem to prove that campus cultures are changing (e.g. increasing enrolment for massive open online courses, MOOCs).

Nowadays, the coordinating and communicating power of digital network technologies allows students and staff to communicate and to share information without barriers of space and time. Van Dusen (1997) sees the term "virtual campus" as a metaphor for the electronic teaching, learning and research environment created by information technology. Guri-Rosenblit (2009, p. 4) argues that the term "virtual university" is as confusing as the term "e-learning" because it is used for a variety of phenomena such as; course catalogues online, online materials for traditional courses, online courses as part of traditional curricula, online activities of some HEIs or for alternative providers of higher education.

As mentioned above, Cornford and Pollock (2003, p 42) move away from the narrow informational view and see the construction of distance education in terms of the construction of an "actor network".The elements of the network (people, texts, objects and machines) can be regarded as actors interacting on the web. They link this to the role of the campus. The campus is itself a complex mixture of people, texts, objects and machines, which converge everyday in space and time and where buildings, laboratories, library, and classrooms also have a role to play. For them the virtual university tries to transcend the constraints of the physical campus, which however can be still resourceful for many of us (based on Cornford and Pollock, 2003).

Some argue that a real campus has some advantages, like social control, since it permits checking if students are doing their work personally. In reality, there is often little direct checking of identity. Besides, current problems with plagiarism, problems aggravated greatly by ICT, prove that a physical campus does not offer a guarantee of social or academic control since computers and internet services are now widely available on most campuses (Cornford, Pollock, 2003, p. 47). Various forms of identification and authentication could be used to overcome the problem of identification online.

A campus is also said to have a role as a significant place: "the place of higher education par excellence", important for the wider higher educational experience (Cornford and Pollock, 2003, p. 41). It allows for "face-to-face interaction and group socialization" (Cornford and Pollock, 2003, p. 41); it is a community of practice, with informal, implicit knowledge going

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around, a "rite of passage" before work and family responsibilities (Cornford and Pollock, 2003, p. 41).

Taking a cultural approach to learning, the psychologist Crook (2002, p. 114) states that the temporal organisation of study, the place of study, the student's participation in a community and their learning materials are four aspects of the traditional culture of higher education institutions (HEIs). Accordingly, he believes that the virtualization of universities leads to a disturbance of these four aspects.

Crook (2002, p. 118) suggests that the functional geography of a campus may help students to focus on studying. It makes it easier to differentiate their study from recreational interests, while a computer offers the possibility for both recreation and study, often simultaneously. However, the new digital generations of students are used to interactive media intruding in every aspect of their life. Besides that fact, students studying at universities located in cities have always dealt with the tension between recreation and study. The coming generations of students, familiar with computers from their childhood onwards, are also used to multi-tasking. Duderstadt (2000, p. 83) wonders how long this generation may tolerate the traditional ways of classroom teaching. It becomes necessary to introduce the new educational approaches and ways of learning based on the electronic media.

As mentioned in the second paragraph of this section, there seem to be too many commercial and other interests related to the continuing existence of the physical campus. Developers looking for new areas of growth are looking for new clients, universities and students with needs for high quality amenities (apartments rather that dorms) on campuses (Wotapka, 2012). Campus building continues to be an important activity. The planning function for campuses becomes more and more complex. The campus forms a drain on resources and a constraint on the reach (time and space) of the university (Fink, 1997, pp. 319-320). A positive element is that higher education is organising for sustainability or for a greener campus (Energy and environmental education resources, 2005, 2006).

Crook (2002) believes that traditional (school-leaving) undergraduates may have a different appreciation of the features of virtualization than lifelong learners. He rightly points out that, although traditional students are now regarded as customers, their opinion is rarely considered. Inadequate attention to student feedback could explain why many traditional universities experience difficulties when implementing e-learning. Another explanation is given by Molesworth and Nixon (2009) who claim that, unless we break down the routine of

educational performance and separate students and staff from their familiar roles, they will continue playing their passive consumer role. Crook (2002, p.122) agrees that groups of students, such as lifelong learners, may be motivated to deal with the disturbances of traditional institutional culture (with regard to time, place, community and materials) in the HEI and may even prefer the flexibility of virtualization.

Currently, learners combine various spaces and environments when carrying out learning activities. Milne (2006), CEO and Co-founder of Tidebreak, a global leader for interactive workspace technology and visiting scholar at Stanford University's Centre for Design Research, identifies the interaction between physical spaces and virtual spaces and segments them further in different types of physical (e.g. classroom, informal room with internet connections) and virtual learning spaces (e.g. computer, MP3 player, portable game player). Breaking away from the traditional roles of students (passive listening) and staff (lecturing) could be a solution for dual mode institutions or for research universities, which are lacking resources for teaching face-to-face. They have to find out how they can use ICT to augment their teaching and learning processes.

3.5. Widening access to higher education improved through ICT?

Widening participation (access) is one of the two pillars of lifelong learning, together with learning throughout life (Smidt, Sursock, 2011, p. 15). Although it seems that, at many traditional universities, ICT use is still considered a pedagogical tool and that distance education (with or without ICT use) is still considered a "second solution" for non traditional students (e.g. older, less gifted, poor, far away, part time/ working, developing countries), there is one prevailing argument that is used in favour of ICT use, the broader access argument. Mainly because of the possibilities for learning for a more heterogeneous population, it is often argued that ICT use increases access.

There seems to be less doubt about the positive aspect of the use of ICT for increasing access to education. Boezerooij, van der Wende and Huisman (2007) claim that higher education institutions with an "anytime, anywhere" strategy (world campus) would have a stronger focus on "increasing access", "offering logistic flexibility" and "use of ICT for the income generation". They claim that these institutions would be responding to an increasingly market-oriented and competitive environment.

Such institutions are exploiting the benefits of ICT by experimenting with organisational models in which the processes and the strategies have been adapted to ICT. These higher education institutions are part of a society in which the different stakeholders, market, state and institution, influence each other. Some of these institutions are indeed "for profit" institutions; others make profits, which are invested in achieving the social goals of the institution. They are responding to market and societal needs.

The possibilities to reach out to and include a more diverse student population could be an argument for organisational change through the use of ICT to organise and facilitate this broader access. Now that most universities have accepted the need to be inclusive universities, one would expect them to use ICT in order to pursue this goal. Dual mode universities are providing two types of educational services, face to face education and online education (dual modes). These universities are using the online channel to provide education, to a broad variety of students.

However, in earlier work, Guri-Rosenblit (2003; 2009, p. 50) observed that "most campus universities have no good reason to increase their student body and to utilize the new technologies in order to mobilize new students studying from a distance". Guri-Rosenblit (2009, p. 51) argues that elite research universities, in particular, are not interested in widening access to large numbers of students and in broadening their boundaries. She states that they would have no need to replace classroom teaching with teaching through ICT. This statement is already contradicted by the practice at for instance MIT, where the first year physics course is now offered on line to the MIT students, as I will discuss later in section 3.6. about controversial issues.

There is a need in many developed and less developed countries for research universities to combine a research mission with a teaching mission to large groups. In these mass oriented universities, teachers have sometimes to interact with hundreds of students. The ratio of faculty to students is exceeding human capacity and not taking into account the importance of human interaction and coaching necessary in teaching/learning processes. Traditional 'distance learning' provides education for students in dispersed locations, where they live but through teaching by correspondence or through multi-media teaching (Guri-Rosenblit, 2009). For those universities, which work with a small number of faculty members, continuous virtual interaction with the large amount of distance students seems difficult to organise. On

line collaborative learning can be a solution. Many scholars in the field of distance education see teaching with ICTs as the third generation of distance education (Guri-Rosenblit, 2009).

Does this mean that we can assume that online collaborative learning is inclusive of diversity? Hughes (2007, pp. 716-718) challenges this notion and mentions three issues, which underlie the aims of online learners and teachers to provide for diversity online. The first one involves the development of a united e-learning group with which an individual can identify: structure promotes communality but lack of structure can cause inequalities.

The second issue concerns how much learners need to know about each other. Hughes (2007, pp. 716-718) argues that too much information about the other learners may lead to identity incongruence because "Inclusion takes place through congruence between learners' social identities and the identities implicitly supported through the interactions in a particular community". For instance someone, who is always late with posting comments due to work or domestic commitments, will not get a response from the group members and feel excluded. This means that group members need skills for interpreting online text or behaviour. A learner from a working class community may have difficulties with using the new academic language and feel excluded from the online community.

The third issue, which could happen not just with ICT, is that one person's inclusion could be another person's exclusion because some people need more time to become member of a group. Hughes builds a theory which proposes that inclusion occurs through congruence between learners' social identities and the identities implicitly supported through the interactions in a particular community. She claims that, in order to build identity congruence, e-learning communities need spaces for both communality and diversity. A community that does not allow diversity will not be a learning community. According to Hughes, the ability to listen to each other online would be a way to follow. She offers possibilities to ensure that e-learning communities benefit from diversity.

Guri-Rosenblit (2003) reminds us that, although ICT creates the possibility of widening access to higher education in developing and in developed countries, students less qualified and unprepared to use the new technologies need continuous support in order to do so. The latter need to be organised and this can be costly. This brings us to the issue of the 'digital divides' which are further obstacles to the restructuring of higher education through ICT.

3.6. Controversial issues: equipment, attitudes and performance

Three kinds of issues related to ICT can create differences and inequalities between people, ('digital divides'): lack of equipment, attitude to the use of ICT, and uncertainty about the benefits.

In respect of the lack of equipment, this problem is perhaps less of an issue in most of the traditional universities in developed countries. Rather, the problem that exists is the insufficient exploitation of equipment.

The second issue is the lack of the right attitude towards using ICT. It is seen as a technical resource that can be used for pedagogical purposes. Volk and Keller (2010) suggest that two types of competence are necessary for the integration of e-learning in instruction: teaching skills and media literacy. Training for the deployment of ICT in teaching is necessary. For example, the three main universities in Zurich (Switzerland) offer teachers and academic staff the possibility to attend a professional development program, which supports the acquisition of ICT competences and leads to the "Zurich E-learning Certificate" (Volk, Keller, 2010). Although new generations of students are more and more familiar with ICT, teachers often are not trained in pedagogical consequences of ICT use and certainly not in the technological side of it. The lagging behind in innovative use of IT in higher education can, indeed, be the consequence of the 'attitude' digital divide, which still exists with older generations still in power in our more traditional universities. Castano-Munoz and Duart-Montoliu (2009) show that the potential of web 2.0. technologies is not being used. Students are using the web as consumers, but are not empowered as "creators" of knowledge due to a lack of change in the pedagogical model (students taking control of their own learning). Investments in technological platforms take place, but are not used for changing the teaching methodology or concept.

The third issue is the lack of positive performance results despite the claims that ICT should be able to improve the learning experience. According to Morris (2008, p. 331), discussions about the benefits of introducing e-learning are no longer simplistic discussions about monetary costs and benefits, which used to be the case in the early days of ICT (education as a commodity multiplied and distributed through ICT). The emphasis is now on the potential pedagogical gains and the positive impact on the student learning experience. ICT can provide interaction with professors, tutors, teachers and peer-students. It gives easy access to library and other information resources. It can provide adaptable and flexible learning materials.

Evidence for this comes from the surveys on online learning undertaken by the Observatory on Borderless Higher Education (OBHE) among their members, where we learn that "cost cutting" ranks only tenth among the drivers for online learning (Garrett and Jokivirta, 2004).

If we look at pedagogical performance, however, we get a mixed view. Lundberg et al. (2008, p. 114) conclude, on the basis of a literature review, "that there is no general support of the hypothesis that online students should perform better compared to face-to-face students". According to them, some studies conclude that there are more negative results about student results when using ICT while other studies support the hypothesis that online students perform better. Lundberg et al. (2008) explain this disparity in research findings partly by the different methodologies used, which make the results non-comparable. Another explanation is related to the treatment of online teaching and face to face lectures as "a homogeneous good". There is no distinction made with regard to how well the ICT is being used as a teaching tool (Is the teacher e-competent?).

Ben Youssef, Dahmani (2008) argue that the cause of negative student performance with ICT can be the lack of organisational change because structures (recognizing the new division of labour), identities (e.g. passive attitudes of students) and relationships (teacher as a coach) are difficult to change and/or the fact that there are no incentives for the teachers to make it an enjoyable experience. This means that there is a need for more complementary innovation and organisational change, and a need for incentives for teachers. The fulfilment of these needs could lead to an improved performance. For example, Professor Mooi at the VU, a university in Amsterdam (The Netherlands), a teacher in microscopic analysis of illnesses, is motivated by improving the quality of his teaching material. He interacts with his students through the social media. His lectures are on iTunes U and on You Tube. He states that the study results of his students improved dramatically, even after making the examination more difficult, because his students were able to study the material at their own pace (Riksen, 2012).

We also need to bear in mind the costs and benefits of using ICT (see also above, no simplistic discussions anymore about monetary issues). Guri-Rosenblit (2009, pp. 62-67) argues that making profits and achieving economies of scale is an erroneous assumption about the implementation of ICT in higher education. She mentions that in some cases developing online coursework required expensive technical support and turned out more costly and time-consuming than traditional class room teaching. Setting up the infrastructure and maintaining e-learning are also costly. Guri-Rosenblit (2009, p. 66) also mentions the lack of reliable cost

data. Morris (2008, pp. 337-338) states that, despite many years of experience with e-learning at the institutional level, it has proved impossible either to identify the costs associated with it or to calculate the benefits. Web-based curriculum development is relatively expensive.

"Economies of scope" are the cost savings which result from the sharing of inputs, including knowledge, across the processes used in the production of different, but related, product lines. At traditional universities, the knowledge produced by the academic staff can be shared and used in different channels of educational provision. A combination of different products or programmes can give economies of scope. Within institutions, the exploitation of economies of scope offers the possibility that face–to-face, blended and online course programmes can support each other, through sharing knowledge, pedagogic innovation and the repeated use of course materials.

This could lead to reducing higher education costs and improving quality. Learning over time should also be taken into account here. Economies of learning appear when activities are carried out and repeated learning takes place, and one gets better at it. Morris (2008, p. 337) argues that these potential economies would enable traditional universities to compete with virtual online universities. An OECD study (2005) about e-learning also suggests that e-learning could become an economical viable model if organised in specific way such as for example using standard (pre-existing) software and drawing on the open standards and learning objects model, which makes the use and the re-use and the sharing of electronic resources possible.

The trend towards globalisation of higher education through the use of ICT has been seen by many analysts as producing benefits through economies in course development (Guri-Rosenblit, 2009, p. 62). Although ICT allows for overcoming the barriers between space and time, it has been rather difficult to act globally and enter new markets through ICT since every geographically or nationally distinct learners group needs an adapted curriculum for which an investment in development is necessary (Morris, 2008, pp. 335-336). However, the recent success of companies (e.g. Coursera, Udacity) offering Massive Open Online Courses (MOOCs) is causing a shift in the evolution of internationalisation in higher education. MOOCs seem to confirm the trend towards the unbundling of higher education (The Economist, 2012; see also chapter 2 about the tensions between research and teaching). Lawton and Katsomitros (2012) report that by mid-August 2012, more that 1 million people registered for MOOCs courses through Coursera, a MOOC company. More than one third

were in the USA; the others were from Brazil, India, China, Canada, UK, Russia and Germany.

Producing economies of scale through the use of ICT, has been an argument for national policy interventions to promote e-learning (Morris, 2008). However, it has been difficult for governments to promote a national ICT strategy because it required collaboration towards a united strategy for ICT between competing HEIs, which seems to be rather difficult in an environment of competition. Centralised initiatives such as the E-University in the UK and the "Scottish Knowledge", an e-university owned by Scottish universities and other investors (Morris, 2008, pp. 336-337) failed, among other reasons because of this tension between collaboration and competition.

The development of ICT units of study targeted at large student audiences were supposed to bring economies, but often proved not to be useful as a pedagogical tool (Morris, 2008, pp. 338-339). It seemed to be the wrong way for teaching large audiences[15]. However, more recent experiences at for instance Georgia Southern University indicate that for teaching large groups, ICT can be very effective, if it is used in such a way that it reduces the workload of the professor (e.g. small group discussions of online lectures, video segments that incorporate streaming audio/video, electronic response pads) (Marsh II, Mc Fadden and Price, 2003; website of Georgia Southern University[16]). Jungic et al. (2006) reflect on large class teaching of mathematics (more than 350 students) and comment on the many challenges, such as maintaining a level of human interaction and effectively communicating the subject material. They explain how the use of contemporary technology can improve the task of managing a large class.

Interactive, collaborative teaching and learning taking place in smaller groups, can make the contribution and the collaboration of students more productive (Laurillard, 2002, p.159 ; Biggs and Tang, 2007, p. 128; Brindley, Walti, Blaschke, 2009). As an example, Professor Eric Mazur at the physics department at MIT recently decided to teach its large introductory physics lecture for undergraduates (on campus) in a different way (Mazur, 2008; Rimer, 2009). The focus is now on smaller classes with hands-on, interactive, collaborative learning.

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[15]   On teaching large classes: The university of Queensland (Austr.) Final report (March 2003). Teaching large classes project 2001. http://www.tedi.uq.edu.au/large classes

[16]   http://academics.georgiasouthern.edu/cet/resources/tlc/index.htm

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Initially, students were against this initiative. Now, however, attendance is up and the failure rate has dropped by more than 50 %. The physicists claim that their decision is based on research. Other universities such as, the Rensselaer Polytechnic Institute, North Carolina State University, the University of Maryland and the University of Colorado at Boulder, as well as Harvard (Rimer, 2009) are also adopting interactive, collaborative, student-centred learning because they claim that students learn and apply the fundamental concepts better.

3.7. Conclusions and issues for a research agenda

In this chapter, I have discussed the potential for restructuring academia through ICT. Possibilities for collaborative learning on the web, take away many of the old arguments about the lack of social contact when using ICT. ICT will eventually lead to organisational change if some cultural barriers can be overcome, such as seeing ICT only as a technical tool or clinging to the physical campus as the only possibility for socialization and collaboration. The possibilities for widening access may convince established universities to use online education as a way of reaching out to a more diverse student population.

There is a need for new organisational models for universities in order to enable universities to better respond to new educational demands and opportunities. Based on a new infrastructure for organising the core process of developing and delivering courses, new educational organisations will become competitors of established universities, which are already adapting learning processes and administrative processes (Hanna, 1998; Ernst &Young, 2012). Effective exploitation of all the possibilities of new technologies makes it possible for universities to adapt purposes, structures, processes and programmes and to take on societal challenges within the context of a global, knowledge-based economy (Hanna, 1998).

The variety of issues discussed in this chapter are summarized in the diagram below (Figure 1, Chapter 3).The issues about ICT are all interrelated. I tried to make sense of it in order to structure these issues.

Figure 1, Chapter 3: ICT in Higher Education

| ICT in Higher Education. No limits by barriers of space and time. |

Strategic rejuvenation through ICT
- Technological innovation in the core processes (teaching and research)
- Changes in relationships and roles
- Pedagogical, financial and planning strategies necessary
- Potential for an increase in access and for a student-centred approach

Conflicted attitudes
- Critique of the value of e-learning
- Negative experiences
- Loss of traditional university values
- Benefits not clear
- Lack of rewards
- Quality concerns
- Resistance to change

Restructuring academia is complex; it requires:
- A vision on ICT by university leaders:
  - ICT is not only operational enabler
  - It should be embedded in pedagogical principles
  - It could be a more effective system for financing and delivering learning services
- New organizational practices and structures
- Redesign of conventional processes and practices
- Financing and governance changes

Importance of (physical) campus
- Advantages real campus
  - Communities
  - Psychological advantages
  - Necessary for young people
- Different distribution channels possible (face to face, online)

Widening access
- ICT increases access for large groups in developed and less developed countries
- Necessary conditions for a more diverse population: integration of people from different backgrounds
- Costly: students need to be prepared.

Controversial issues
- Equipment: Lack of or insufficient equipment
- Attitudes towards ICT: Teaching skills and media literacy required when using ICT
- Uncertainty about benefits: Pedagogical gains or not? Cost savings or not?

Source: De Jonghe (2014)

Two key observations can be drawn:

- Despite claims that ICT will profoundly affect higher education structures, ICT is still not used meaningfully to alter the strategy of traditional higher education institutions. ICT is seen merely as a tool to complement the traditional core functions of the university, without making the fundamental organisational changes that may be required to respond to the needs.

- Being a community on a physical campus is still considered essential compared with the so-called "individual experience" using ICT at so-called 'distance' or 'virtual universities'.

From the discussion in Chapters 2 and 3, key issues on the effective deployment of ICT are:

- In the knowledge society, we are confronted with demands to address global issues, which need to be solved in an interdisciplinary way because of their complexity (social goals).

- The knowledge society also emphasizes economic goals through partnerships for economic benefits and commercial interests.

- Research in HEIs has been professor-centred since more than hundred years. It is based on the specialization in the disciplines (the "tribes"), which are becoming more fluid. New concepts of research (mode 1, mode 2) arise.

- Teaching is confronted with changing pedagogical principles such as student-centred concepts, which emphasize the responsibility of the students for their own learning.

- The labour market is expecting skills beyond academia and lifelong learning.

- Lifelong learning gives rise to a changing student concept.

- Contemporary academia is confronted with pressures for performance (rankings, assessments, Bologna reforms)

- Roles for ICT are to be found in provision of online learning, in possibilities for widening access, in providing an alternative to the physical campus and in possibilities for restructuring academia.

They have been summarised as follows in the influence diagram/ framework (Figure 2, Chapter 3).

Figure 2, Chapter 3: Pressures on contemporary academia
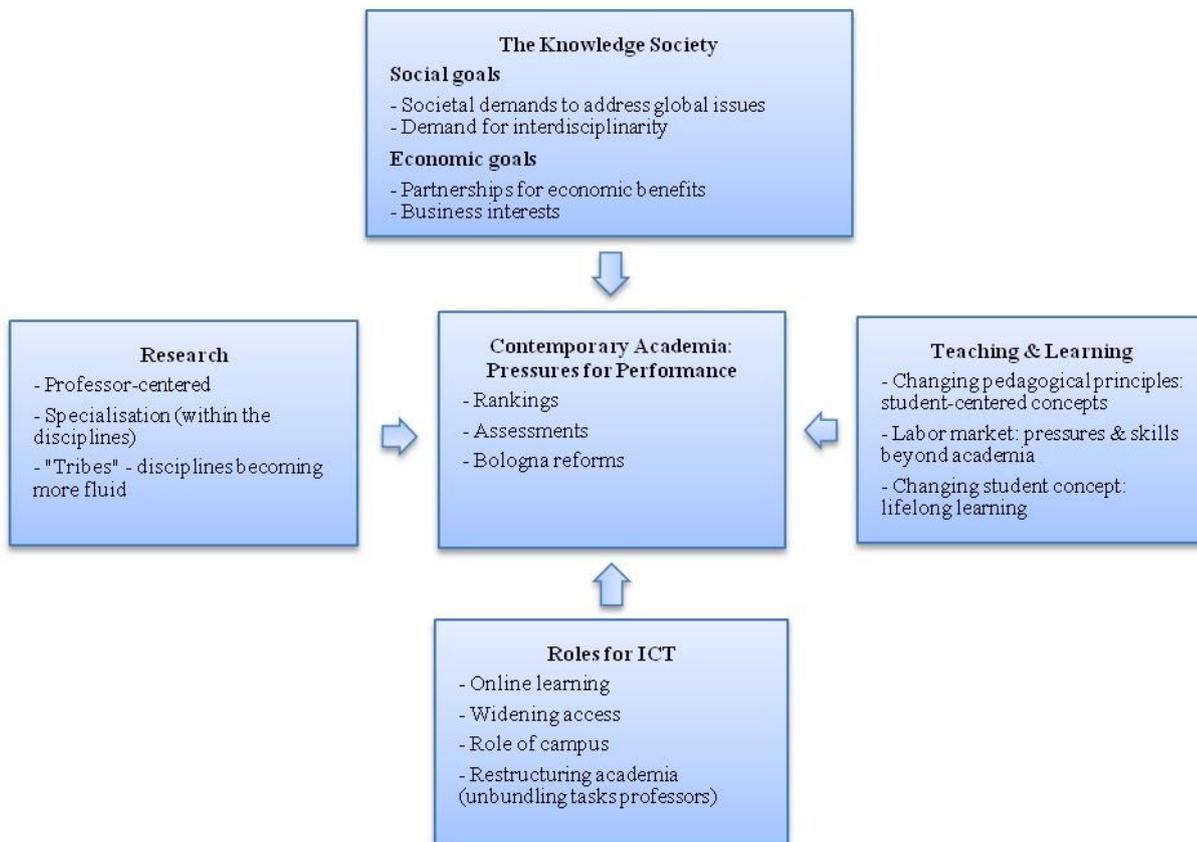
Source: De Jonghe (2013)

Integrated ICT learning consisting of technology embedded in a learning model, may offer a solution. Therefore, I will look at a specific case study of one innovative university which faced these tensions and which has explicitly set out to offer a new way forward. How are these tensions impacting on this individual university? How might universities more generally react? Universities will not all have the same reaction, but this specific case study will give some insights as to how other institutions might go about it.

Constructs for a research agenda

The discussion in Chapters 1-3 suggests several constructs that could be important for my study:

- ➢ Forces from the knowledge society with an impact on the strategic direction of HE institutions are:

- societal demands to address global issues
- demands for interdisciplinarity
- demands for partnerships for economic benefits
- the importance of business interests

➢ Tension and the delicate balance between destructive and constructive tension between core values of HEIs also plays a role in many HE institutions:
  - a focus on teaching and learning
    - changing pedagogical principles
    - labour market pressures
    - changing student concept
  - a professor centred view with a focus on research
    - professors have a need to be involved in research
    - specialisation and the disciplines

➢ Pressures for performance exist in many HE institutions:
    - Bologna reforms
    - Assessments
    - Rankings

➢ Roles for ICT are prominent in contemporary HE institutions:
  - Online learning
  - Widening access
  - Role of campus
  - Restructuring academia

Such constructs are tentative in the sense that, no matter how well they are measured, we are not sure they will be part of the resultant theory that we want to build.

The Excellence framework (EFQM model)

After doing a first analysis of the case data from my first research period, I looked at the literature, and realized that many issues would be involved. In order to analyse the case data, I needed a framework to classify the data. I pinpointed several constructs as indicated before. The EFQM model allowed me to integrate all the issues because it is a framework which comprises all the aspects of the leadership and the management of an organisation.

The European Foundation for Quality Management (EFQM) was founded in 1989 by the Presidents of 67 European companies. Their aim was to increase the competitiveness of European organizations and to emphasize the sustainable development of European economies. A team of experts from industry and academia was asked to set up a holistic framework that can be applied to organizations in any sector, regardless of the size (www.efqm.org, 2014). The EFQM model is the most used organizational reference framework in Europe. It is used by more than 30 000 organisations in the world. It provides a framework for organizations, which allows them to follow up on different aspects on their functioning in contemporary society and to detect their strong and weak points and compare with other organizations (www.bbest.be/nl, 2014). Hereafter, I will use the term "framework" instead of "model". The EFQM framework consists of nine criteria: Leadership, Policy and Strategy, People, Partnership and Resources, Processes, Customer Results, People Results, Society Results and Key Performance Result (see appendix 8). The first five criteria can be considered as enablers (what is the organisation doing?) leading to the four last criteria, which can be considered as results (what is the organisation achieving?). The framework is regularly reviewed based on the newest research related to managing organizations. It has undergone many developments over the last 25 years. Indeed, according to the new strategic direction of EFQM, added value and innovation and a focus on leadership are becoming more important, both in private and public, profit and non-profit institutions (see updated EFQM Excellence model 2013). The EFQM framework is used by many organisations, in the profit as well as in the non-profit sector, as a framework to follow up the management performance of their organisation.

The EFQM framework is often perceived as a "business" model (Brown, Evans, not dated) although it is used in the profit as well as in the non-profit sector. Every connotation of "business" in higher education is considered suspect by some faculty members and immediately related to managerial control of the faculty and to profits (Greenberg, 2004).

Virtual universities are especially vulnerable in this respect, as I will discuss further in chapter 7.4 (feature 6).This may be related to the fact that some universities, such as the University of Phoenix, which is delivering teaching and learning services online, are based on a "for profit" model.

Al-Tabbaa (2012) concludes that the use of the EFQM framework is equally relevant in the non profit sector. According to Davies et al. (2007), certain aspects of the EFQM framework and its related concepts have a good cultural fit with academic culture but other aspects (business models, strong focus on quality improvement processes, and profit making) act as a cultural barrier to the implementation in academic environments. The EFQM Education Platform organizes on a regular basis webinars (seminars on the internet) during which experiences are shared by education organizations using the EFQM framework (EFQM website, 2014).

External quality audit (EQA) models have been implemented in many universities. It has been debated if EQA models can have a positive influence on university performance (Carr et al., 2005). Carr et al. (2005) conclude that evaluations are more effective if university governance and management and government initiatives are examined together with the EQA. The EFQM framework is often used as an EQA for examining the quality of organizations, including universities. It is used as the basis for evaluation of the quality of management and of the organisation e.g. business schools under the EQUIS label.

It provides a useful framework on which to hang on my research. I used the framework first:

As a guide or template for interviewing because it allows for open, neutral and simple questioning. The interview protocol was prepared on the basis of the nine criteria of the EFQM framework: Leadership, Policy and Strategy, People, Partnership and Resources, Processes, Customer Results, People Results, Society Results, and Key Performance Results. The same type of question was asked to different persons in the organization with the aim of getting a different perspective on the issues.

This structure helped to provide a different view on the organisation (since the nine criteria focus on all the aspects of the organisation and not only on the core tasks or the programmes of an academic institution) and consequently a broader perspective on the issues (interview protocol in appendix 8).

Secondly, the EFQM framework was useful to categorize the data: from documentation as well as from the interviews. The nine criteria or themes (questions are related to these criteria) of this framework, cover all the aspects related to managing an organisation. This categorization enabled me to see some patterns and code my qualitative information.

Thirdly, the EFQM framework was useful for providing a basis for the teaching case based on the findings from my first research period. Writing the teaching case was useful for further reflection on challenges facing universities, with regard to their pedagogical, technological, research and organisational model.

The case I studied also used the EFQM framework at the time of the first research period (reference made to this fact in chapter five).The case I studied wanted to identify and satisfy student needs and also to improve gradually processes and their outcomes and used the criteria for performance excellence from the EFQM framework. In section 6.1., I explain that (part of) UOC did not find the EFQM model so useful for measuring learning process aspects and the achievement of educational objectives and developed a specific framework for this purpose. While other frameworks might be formulated on the basis of the discussions in the chapters 1, 2 and 3, the EFQM framework is attractive because it is in fairly widespread use, and it is sufficiently comprehensive to allow me to encapsulate all the issues identified. The use of the EFQM model allowed me to monitor the performance of the university and to figure out which university governance and management and government initiatives were important.

4.   Research methods and approach

4.1.   Research objectives/questions

In this study, I examine a newcomer institution to the higher education sector, "a virtual university" aspiring to be a "real university". My research objective/questions follow from the results of my literature review. In section 3.7., I concluded that ICT is still merely seen as a tool to complement the traditional core functions of the university, without making the fundamental organizational changes that may be required to responds to the needs. I also concluded that there are roles for ICT to be found in provision of online learning, in possibilities for widening access, in providing an alternative to the physical campus and in possibilities for restructuring academia. I hope to address the gap in knowledge about the effects of ICT deployment on the organisation over time because there is a lack of longitudinal studies on this subject. I am seeking to illustrate that the issues that the literature has discussed, are also a concern in this virtual university and have led to change processes in the virtual university. I am also seeking to validate that despite the knowledge about technology as a complementary platform to deliver courses, it is also necessary to take into account the strategic and organisational implications and that decisions about technology therefore require involvement at the top level of the institution.

Key research questions are set out in Table 1, Chapter 4.

Table 1, Chapter 4: Key research questions

Research question (RQ)

RQ 1: What are the forces from the knowledge society affecting the strategic direction of the case organization, UOC?

RQ 2: In what ways are the strategies of this 'virtual university' different from other universities with regard to the core values of HEIs, especially in respect of research and teaching and learning?

RQ 3: How does this university address increasing needs and pressures for performance that are present in contemporary academia?

RQ 4: What are the potential roles for ICT?

RQ 5: What lessons can be learned from the change processes followed by the case organisation?

RQ 6: How can this experience inspire or provide lessons for more established universities?

Source: De Jonghe (2013)

I looked at this newcomer institution over two periods: 2002-2003 and 2008-2009. This allowed me to look at developments and the management of change over time with regard to issues related to research and ICT-supported teaching and learning, which were identified during the first period of analysis. The comparison between two periods of time represents an original aspect of this study. I used the EFQM model discussed at the end of the previous chapter to organize my research.

First, I will give a brief overview of the philosophical underpinnings of research methodologies. I believe this is necessary since the confusion and misunderstanding about case studies are closely linked to philosophical attitudes towards science and research. It is also important for my own understanding of the discussions about case research to have a clear view on the philosophical issues. It is important to know the epistemology of the different disciplines involved especially in an interdisciplinary field, such as higher education management research. I also drew on my background in law, in management and in public administration, and on my practical experience of working in these fields as a consultant in the area of strategic management, change processes and organizational performance improvement, particularly in the non-profit sector. I supplemented the case methodology based on interviews, with other methodologies such as critical analysis of documents, extensive search on the internet, analysis of critical incidents, comparison of my findings with other written sources and compared it to my professional experience as a lawyer and a manager used to historical reconstruction. I used the EFQM model as a practitioner in other contexts. It allows for open, neutral and simple questioning. In section 4.2, I will elaborate on case study research as a research strategy. In section 4.3, I will discuss my research plan for this study and explain my research based on five components of research design before reflecting on my research process and concluding in 4.4. Case study research can be set up differently depending on the ontologic and epistemologic beliefs of the scholars. Different

views on evidence, analysis and purpose of the research will lead to differences in case research.

4.2. Philosophical background

One of the most common distinctions made in research is between qualitative and quantitative research methodology, even though some authors state that this distinction has been losing relevance (Toulmin, 1982). Quantitative researchers follow the scientific traditions of induction and deduction, and look for aggregate patterns across empirical observations. Some qualitative researchers follow the traditions of humanism and reject the scientific approach; others accept the basic goals of science, but reject some of its procedures.

In order to understand the fundamental difference between qualitative and quantitative approaches, it is important to look at the underlying philosophical issues. For this brief introduction, I rely partly on the work of Potter (1996).

Philosophical issues are those which relate to the underlying ontology (assumptions about whether the world reality exists and, if so, in what form) and epistemology (assumptions about knowledge and how it can be obtained), which guide the research.

With regard to **ontology**, the alternative positions are between realism (there is a fixed material world external to people with its own properties e.g. there are rocks in the mountains) and idealism (the reality is in one's mind e.g. there are no rocks until perceived by a human mind).

This discussion becomes different for the realist when the phenomenon studied is a human construction instead of a physical substance. Between the alternative ontological positions, realism (human behaviour can be explained in general patterns), and idealism (there is no social world but many social worlds which are human constructions, there are several positions possible. According to Potter (1996), there are five positions: mechanical materialism (everything has a physical existence, what happens is determined by prior physical causes according to invariable laws) e.g. B.F. Skinner; dialectic materialism (material reality is constantly changing, new properties evolve) e.g. Hegel and Marx; idealist position of actionalism (humans are subject to situational and social forces they can not control but they also have the capacity to make choices e.g. Aristotle and Kant, much of the mass media research; ideographic type of idealism (apart from the individual there is

something that varies across individuals) and solipsism (the mind with its constructed meanings is all that exists).

Qualitative research could be based on the idealist position, but some qualitative research takes a realist position (there is an existing reality to be discovered, a truth accessible through language).

With regard to **epistemology**, the question becomes how can an observer "know" the phenomenon? Is it possible to gather data that are not influenced by the researcher collecting the data? This is not simply a question of defining correct measures, a correct sample and valid data. The question led to two groups of thinkers: the realists (empiricists, earlier positivists) who believe that it is possible to know reality, and the constructivists, who believe that reality is constructed through a creative process.

Between the two extremes of realism and constructivism, there is an intermediate position, inter-subjectivity. People can have common patterns of forming meaning. Researchers can try to understand those patterns and try to explain how they use them, without being purely subjective. Researchers can also gain empirical knowledge of the external world and approach this knowledge with embedded interpretations.

The issues of ontology and epistemology are often confused in literature because several theoreticians argue that they are the same for idealists but different for realists.

In qualitative research, there are three positions related to epistemology. For instance, a researcher can give a factual, value free description of the phenomenon using neutral and objective data-gathering instruments, procedures and analytic techniques (objective). A second position is that a researcher cannot be purely objective, but is not limited to pure subjectivity either (inter-subjectivity). A third position is that researchers can have different interpretations of the same observations (standards can be applied to assess the relative value of those interpretations).

Case study research can be set up differently depending on the ontological and epistemological beliefs of the researcher. Different views on evidence, analysis and purpose of the research lead to differences in case research. This explains also why some authors (e.g. Ragin, 1987, 1992; Yin, 2003) state that case research should not necessarily be called "qualitative research".

Some management researchers use methodologies that are a compromise between the positions described in this section. Besides the world view of the researcher, other factors, such as pressure to adopt certain research methodologies, interests of governments, companies and funding organisations, can have an influence on the research methodologies chosen (Easterby-Smith, Thorpe and Lowe, 2002, p. 57).

In my study, I took the intermediate position of inter-subjectivity. I tried to gain empirical knowledge of my subject and tried to understand the patterns I found, sometimes with embedded interpretations.

4.3. Case study based research

4.3.1. Background and basic concepts

Studies in higher education have often suffered from a rather weak theoretical and analytical framework (Tight, 2004). Several disciplinary fields contribute to higher education research and different approaches are used. There is a relative lack of writing by management scholars in this field. However, management scholars are carrying out organisational research which results very often in the development of theory.

Hamel et al. (1992) suggest that the origins of case study research are to be found in Europe, and predominantly in France. An academic conflict in 1935 between the University of Chicago, Department of Sociology, which was mostly associated with case study research in the USA (Platt 1992), and Columbia University (in favour of the scientific method) led to the subsequent decline of the case study as a research methodology (Becker et al., 1994-2012). In the 1960s, the limitations of quantitative methods worried some researchers and case study research became again popular, although in 1984 it was still a specialized niche among social science methods, according to Yin (2003).

The terminology concerning cases is confusing. The term "case" is used in many disciplines and in different meanings, even within one discipline. It can be used to describe a specific organisation or simply to indicate a phenomenon or a specific topic, to give an example, to describe a research methodology or method, or to describe a teaching method. Although most teaching cases are linked to real situations, some cases are invented as an exercise to clarify and illustrate some theoretical concepts. Brewer and Hunter (1989) and Punch (1998) list six types of units, which may be the focus of case study research: individuals, attributes of individuals, actions and interactions, residues and artefacts of behaviour, settings (incidents

and events) and collectivities. A case about an organization can be considered as a case about actions and interactions in a collectivity.

Ragin (1992) published extensively about the reasons for all this confusion and tries to get out of it. He points out that the term "case" and the different terms linked to the concept of case analysis are not well defined in social science (Ragin, 1992, p. 1). According to Ragin, the different conceptions of the term "case" play a role in the continuing discussion about qualitative and quantitative (social) science. He states that case study research should not necessarily be called "qualitative research". By clarifying what is meant by "case" and explaining its different meanings, he tries to make it easier to link qualitative and quantitative research.

At a symposium in the spring of 1990, on the topic of cases, on which Ragin reports, it seems that participants agreed on the following:

- Case analysis is fundamental to the conduct of social sciences and its status has not been examined.

- Individual social scientists see cases in very different ways and those different answers to "what is a case" affect the conduct and the results of research.

- In a given research project, cases may be multiple (what the case is may change during the course of research, when the results are presented, and when the audiences are confronted with it).

- The differences in approach among the scholars preparing for the 1990 symposium were substantial.

According to Ragin's (1992) analysis of the symposium contributions, there are two dichotomies in discussions of social science methodology.

- The first dichotomy (do cases involve empirical units or theoretical categories) overlaps with the philosophical distinction between realists and nominalists (constructivists). Realists see cases as given or empirically discoverable. Nominalists believe that cases are theoretical constructs, the consequences of theories or conventions.

- The second dichotomy (are cases specific and developed during research or are they general and rather external to the research process) overlaps to a certain extent with

the qualitative-quantitative divide in social science. Cases of quantitative research are rather conventionalised, generic categories, independent of a specific research effort. Cases of qualitative research come up as specific categories during the research (what is this - the research subject - a case of?).

Combining the two dichotomies, Ragin (1992, pp. 8 - 9) comes up with four case conceptions (see Table 2, Chapter 4):

Cases are found: empirically real and bounded but specific; they must be identified and established as a case during the research process; assessment of the empirical bounding of cases is an integral part of this process.

Cases are objects: empirically real and bounded but general and conventionalized; no assessment of empirical boundaries of cases is necessary; case designations are based on existing definitions present in the literature.

Cases are made: specific theoretical constructs with decisive features which appear during the research process; gradually imposed ("taking shape") on empirical evidence during the research process.

Cases are conventions: general theoretical constructs that structure ways of seeing social life and doing social science; products of collective scientific work and external to an individual research effort.

Table 2, Chapter 4: Conceptual map for answers to "What is a case?"

Understanding of cases	Specific	General
As empirical units	1. Cases are found	2. Cases are objects
As theoretical constructs	3. Cases are made	4. Cases are conventions

Source: Ragin (1992). What is a case? Table I, 1. p. 9

This division of case conceptions is a conceptual map for linking different approaches to cases. Most researchers use more than one conception during their research process (Ragin 1992, p.11). This happens because research combines theoretical and empirical analysis, and the two kinds of analysis may use different cases or units.

To avoid the confusion about the concepts of cases presented in the former paragraph, Ragin (1992, pp. 217-225) proposes the idea of "casing", which means seeing cases as the products of basic research operations to be carried out according to the purpose of the researcher and the subject and objectives of the study. "Casing" is a research tactic in order to resolve the difficult issues of linking ideas and evidence. According to him, "casing is an essential part of the process of producing theoretically structured descriptions of social life (3 and 4, Table 2, Chapter 4, above) and of using empirical evidence to articulate theories (1 and 2, Table 2, Chapter 4 above)".

All this confusion definitely contributed to the status of case research as a "soft" method. The viewpoints about the meaning of case study research are very different. They are linked to different philosophical views and to various techniques used in producing the cases depending on the discipline or the topic of research. Ragin (1992, p. 3) states that "the term 'case' is one of many basic methodological constructs that have become distorted or corrupted over time". Ragin (1992, p. 34) gives the example of an ethnographer who interviews employees in a firm to find out about the informal organisation of the firm. This is considered "one" case. However, a researcher who uses these interviews for a data set for quantitative assessment of job satisfaction variation among employees, is considered to use many cases. According to him it is a typical pattern for an important methodological term to gain numerous and sometimes contradictory meanings. Ragin (1992, p 3) cites other examples of terms with several meanings such as the term "cause" and the term "control".

The scientific contribution of case study research continues to be devalued by three important concerns:

a. It is considered less "scientific" than experiments or surveys.

b. It might not be possible to generalize from a single case.

c. Case studies take too long and result in excessive documentation (Yin 2003).

a. It is considered less "scientific" than experiments or surveys. According to Yin (2003), researchers who carry out case study research are considered as downgrading their discipline. Case studies are considered less precise (not quantified), less objective and less rigorous. This stereotype could be considered as a consequence of the dominance of a scientific model in academic research after the Second World War (Menand, 2010,) and has increased in the wake of the more advanced computer techniques for quantitative social research.

Despite being considered as a "soft" method, the method is still used in social science research (e.g. psychology, sociology, education), in practice-oriented fields (e.g. management studies) and for dissertation research. Increasingly, other (hard) sciences are also using the method. I cannot really see this as a concern since case study research is still being used in many disciplines.

b. It might not be possible to generalize from a single case.

This criticism refers to the statistical problem of generalising based on a "sample of one". Yin (2003) states, that a case study does not represent a "sample". According to him the goal in carrying out a case study (single or multiple design) should be to expand and generalize theories and not to enumerate frequencies (generalize statistics). Eisenhardt (1989) and others (Vaughan, 1992; Walton, 1992) also show how theory can be developed from cases. According to Eisenhardt (1989), no prior theory or hypothesis should be referred to, only some a priori constructs in order to retain theoretical flexibility and have a better grounding of construct measures or evidence. According to Eisenhardt (1989), building theory from cases without prior theory allows the development of new theory. If starting from an existing theory, case study research consists of testing theory. Eisenhardt (1989) describes building theories from case studies, and she presents a roadmap for doing so in a successful way and indicates the strengths and weaknesses of this approach.

The main advantage of building theory from cases is that they can generate novel theory. Another advantage is that hypotheses and emergent theory are testable with constructs that have been measured during the theory building process. Finally, the resultant theory is empirically valid. In my attempt to build a theory, I was inspired by Eisenhardt (1989), who herself combines many parts from the literature on research methods. This led me to a change model.

Punch (1998, p.155) argues that the extensive use of the case study as a teaching method in many disciplines underlines the potential for generalizability of knowledge built from case

studies. If every case is unique, there would be no transferability of knowledge from one case to another similar situation, and the method of training could be questioned. However, according to Stake (1995), a case study should emphasize particularization and not generalization. The focus is on understanding a case itself and its distinctiveness. Stake makes a distinction between scientific generalization (by experimentation and induction) and naturalistic generalization (general understanding based on the case study and experience in individual events).

Punch (1998) refers to Denzin (1983) when he states that generalization is not necessarily the objective of every research project, whether case studies or not. Sometimes, it is desirable to study a case in "its own right" because of the complexity and the specific context. The "negative" case is a special example of this attempt. It is helpful to know why a specific case is so different from the general pattern of other cases. It will allow us to gain insight and to refine a theory.

For Punch (1998, pp.155, 156), case study research can make an important contribution in three ways. It can build in-depth understanding of an unusual not yet understood situation. It can provide understanding of some aspects of new or problematic research areas by discovering important features, understanding them and conceptualising them for further study. It can be combined with other research approaches (e.g. in order to form the basis for surveys to be carried out later).

c. Case studies take too long and result in excessive documentation (Yin 2003).

To prevent this from happening it is necessary to have a clear framework in mind when starting the research and to have a plan and a method to handle the documentation being gathered during the research.

I will discuss some important approaches to case study research hereafter.

4.3.2. A quasi-experimental case study approach

Yin's (2003) work on case study research is considered an example of a positivist (based on a realistic ontology) approach to qualitative research. Easterby-Smith, Thorpe and Lowe (2002, p 54) argue that Yin also moves towards the constructionist position because he relies on analytical, rather than statistical, generalizations for external validity.

As an historian and an experimental psychologist, Yin teaches a quasi-experimental case study approach. For him, a case study is a research strategy, which tries to analyse the

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relationship (interference) between events outside a laboratory. At the same time, it aims to produce new knowledge like other "laboratory" science. According to Yin (2003), case study research should be done in conformity with science goals and methods as mentioned by Campbell (2003, ix) in his foreword for Yin's (2003) book on case study research. From Yin's laboratory studies of the human interface, he realizes that the role of patterns and context in getting to "knowledge" is important.

Yin (2003, p. 15) sees a case study as "a way of investigating an empirical topic by following a set of pre-specified procedures". The logic of design is important. His technical definition states: "a case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between those two are not clearly evident" (Yin, 2003, p. 13).

According to Yin (2003), a case study as a comprehensive research strategy is often chosen depending on the type of research question (how and why questions), the control the researcher has over the events and/or the behaviour, and the focus on the contemporary or on history. Case study research can be used if the assumption is made that context and contemporary phenomenon are closely linked and have to be studied together, and that the behaviours cannot be influenced.

The second part of Yin's technical definition deals with technical characteristics:

"The case study enquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as a result:

- relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result

- benefits from the prior development of theoretical propositions to guide data collection and analysis" (Yin 2003, pp. 13-14).

For Yin (2003), the inability to replicate at will is part of the problem of case study research. Therefore, he points out that singular-event case studies which cannot be replicated should be used to their fullest, but that we should be open to opportunities to carry out intentionally replicated case studies.

4.3.3. Humanistic validity-seeking case study methodology

Some researchers, such as Stake (1995), express their choice of case research as a method in a more holistic way: They use case study as a research method in order to "catch the complexity of a single case".

Stake's type of case study methodology does not use quantification or tests of significance, but works on the same questions and shares the same goals of knowledge. Stake's view (1995) on case studies is based on naturalistic, holistic, ethnographic, phenomenological and biographic research methods. He presents "a disciplined, qualitative mode of enquiry into the single case" (Stake, 1995, Introduction).

Stake wants to understand a particular case, the uniqueness and complexity. The emphasis is on the interpretation of the researcher (subjectivity is seen as essential to understanding) more than on the interpretations of the people studied. The researcher tries to preserve multiple realities. The purpose is particularization, not the production of generalizations. However, valid modification of a generalization can take place after a case study.

Given his views, Stake (1995) advises researchers to organise the research based on issues (linked to political, social, historical and personal contexts) rather than on hypotheses and goal statements which lessens the interest of the situation and the context. However, case study research based on issues and context does not preclude goal statements and. Stake proposes to improve on the research questions as a study continues.

Stake's (1995) approach to case study research is based on the belief that knowledge is constructed instead of discovered. The researcher will construct a clearer reality and a more sophisticated one (Stake, 1995, p.101). As a relativist, he emphasizes experiential and personal determination of knowledge. The value of interpretations varies in terms of credibility and utility (Stake 1995, p.102).

Different approaches to case study research go "from a bottom-up tale of discovery to a top-down discussion of how 'worldly' conventions in the use of cases shape social scientific thinking" (Ragin, 1992, p. 217).

4.4. An explanation of my research process

Yin (2003) identifies five important components of research design:

    1. Problem definition and study questions,

2. The propositions,

3. The unit of analysis,

4. The logic linking the data to the initial study questions, and

5. The criteria for interpreting the findings.

Not all case study researchers attach the same importance to each of the components, but the framework offers an interesting format for discussing some important issues, as I discovered.

According to Yin (2003, p. 28), covering the five components described in this section will force the researcher to construct a preliminary theory related to the topic of study. For Yin, the role of theory development, prior to data collection, is essential whether the purpose is to develop or test theory, and is a point of difference with methods such as ethnography and grounded theory and the method used by Eisenhardt (see section 4.4.2).

4.4.1. Problem definition and study questions

In order to answer the research questions set out earlier in Table 1, Chapter 4 at the beginning of this chapter, I have chosen to study an HEI where ICT is strategically embedded in the mission. This HEI has been under pressure both from the traditional academic community (outside) and from the academics inside to comply with traditional core values of the university. I wanted to study how this HEI has coped with these pressures, tensions and challenges, in order to assess their success and how sustainable it is. I presume that my findings could contribute to theories of change and be of importance for other universities.

4.4.2. Propositions

Yin (2003, p. 21) will start with hypotheses or goal statements in order to focus the research from the beginning. According to him (Yin, 2003, p. 22), studies without propositions are more explorative and should at least have a purpose.

For the organisation of my research, I studied the roadmap suggested by Eisenhardt (1989, p. 545). Her method of continuous comparison of data and theory (leading to constructs), beginning with data collection, is based on insights from Glaser and Strauss (1967) and Strauss (1987). In their methodology, the structure has to come out of the data after systematic analysis establishes themes, patterns and categories. Eisenhardt's (1989) notions of case study design, replication logic and concern for internal validity are based upon Yin (1984, 2003). The specific techniques of Miles and Huberman (1984), for analyzing content

in a proceduralized way, had an impact on her methods for analyzing data. The differences are that Eisenhardt (1989) combines this earlier methodological work in a specific way. She focuses on theory building from cases and how to do it (not stressed by Glaser and Strauss, 1967); she contributes new ideas (e.g. a priori specification of constructs) and adopts a more positive view of research (testable hypotheses and theory generalizable in different settings).

I applied some *a priori* constructs to UOC, identified in Chapters 1-3, to explain the context in which contemporary higher education institutions function.

Eisenhardt (1989, p. 536) states, that the research question may shift during research. My research question changed during the research process and the writing down of the findings, because the focus became clearer. From looking at UOC's organisational or business model in the first research period, I focused more on the tensions between research and teaching and on the ICT possibilities for teaching and learning. I realised that a newcomer to the HE sector, such as UOC, that is implementing new business models for different aspects of its mission, is also confronted with change processes. In my case, I compared the constructs with the key changes that I found when comparing my two research periods at UOC (see Table 10, Chapter 6).

4.4.3. Selecting cases and unit of analysis

By carrying out research on why ICT could work in some institutions and not in many others, I came across UOC as an example of an HEI that embedded technology within its strategy and claimed to be a new type of university. Because this HEI chose ICT deployment as a central feature of its strategy, I thought it would be an appropriate subject for detailed study. I think it is useful to focus on a case from Spain because I wanted to research "absences and silences" (Morley, 2010) in Higher Education. Spanish higher education is seriously under-researched within a higher education literature that is dominated by models from North America and Northern Europe.

The selection of the case was not an a priori choice, but became part of the research project started by wondering why many ICT initiatives did not succeed. I chose a case organization, in which the phenomenon I am interested, was "transparently observable" (Pettigrew, 1988; Eisenhardt, 1989, p. 537. In 2001, UOC got the ICDE award for being the best virtual and distance university in the world. I chose UOC because it seemed to be an interesting example from which to contribute to the field of strategy and organisational change within an HEI. Moreover, UOC was an institution that seemed to be rather successful in finding a way of

combining the core values of a university since, besides promoting their pedagogical model, they were also emphasizing the importance of the research. My case study on UOC is about a contemporary phenomenon closely linked to the context in Catalonia, where I cannot influence the behaviours.

Yin (2003, p. 42) states, that doing a case study over a longer period of time, is among the rationales for a single-case study. I looked at this HEI over two different periods in time, 2002-2003 and 2008-2009 (see Appendix 6, Stages of my research process). I received good access during the first research period (2002-2003). My semi-structured interviews in December 2002 were prepared by a visit to UOC in November 2002 and a discussion with the director of the research department. Following this visit, a proposal for a case study was sent to UOC. It included the key issues (see Appendix 7, Proposal for development of the UOC case) I wanted to investigate and a work plan.

Following the proposal to UOC, mentioned above, the interviewees were selected in agreement with my contact at UOC. They were expected to inform me on the issues I mentioned above.

I interviewed in depth seventeen people in total: five at top management level, eight at the middle management level, three at the individual level of academics of administrators, and one external person (see Table 3, Chapter 4). Each interview took about one hour and 30 minutes.

Table 3, Chapter 4: Interviewees in research period 2002-2003

- **top management** (mostly academics):

  the Rector, the Vice- Rector of educational innovation and methodology, the Vice-Rector of international relations, the Vice-Rector of research, the general manager (not an academic);

- **middle management**, academic or administrator (or both): the assistant general manager (a former academic, a management professor), the information systems director (a specialist in learning solutions for virtual campuses), the international projects director (an academic), a (deputy) academic programme director, two academic directors of a study field, the director of the lifelong training department (non-degree programmes), the director of the (emerging) research department (the IN3 institute);

- **individual academics or administrators**: a professor from humanities and philology, the director of postgraduate training, an international projects coordinator

- **the secretary general and CEO of the International Council for Open and Distance Education (ICDE)**, who was visiting UOC at the time

Source: De Jonghe (2013)

Although I discovered some tensions and contradictions, I also obtained access during the second period, five years later (2008 - 2009). I carried out a first round of interviews in January 2009 and a second one in May 2009. For both rounds of interviews, it was difficult to secure appointments.

In January 2009 I was able to interview two people: the Vice Rector for postgraduate studies and continuing education (including the global campus), and the director of international relations. The former had been used to be the international projects director during the first research period; the latter was new to UOC and had an international background as a museum director. The difference in openness compared with the first period of research was striking. During the first research period my research was mentioned on their website ("Insead, the

famous French business school is making a case study about UOC."). In my second research period, I felt there was a reluctance to give detailed information. I was told "everything had changed a lot". However, at first sight, UOC's earlier pedagogical and technological model was still applied.

To obtain further access I was asked to submit my draft case update (which first became a case for teaching purposes and eventually became chapter five and six of my thesis). I presented this update without any promises or request for approval. No specific comments were given. My access was, however, restricted in terms of interviews and in terms of internal documents made available. In May 2009 I was able to interview the Rector and the two people I had met in January. I did not have access to all the people I wanted, such as the previous Rector, the general manager, the Vice-Rector for innovation or the Vice Rector for research. Appointments were not confirmed or even cancelled.

Therefore, I also interviewed external people with experience of dealing with UOC since the first research period. The length of the interviews was 45 minutes to one hour. Among the external people there were two content providers (people providing course material) to UOC courses (called hereafter E1 and E2), the Rector of one of the European Open Universities, familiar with UOC (E3), and the CEO of an educational technology company which was sharing its expertise with UOC (E4). The first three people were chosen because they were professional contacts. The fourth one I met at a conference where I was the only person attending the session of this CEO, which made it easy to obtain in depth information. This gave a total of seven interviewees for the second research period.

Palmer et al. (2009, p. 281) found out, among the patterns for relevant research, that micro research (using data such as interviews or participant observation) tends to be more relevant than macro research. For my study qualitative interviewing was important in order to obtain data about the case being examined. My professional experience prepared me well for this task of interviewing informants and I was familiar with interviewees' living and working environment. The European Foundation for Quality Management (EFQM) model, which I had used as a practitioner in other contexts, allowed for open, neutral and simple questioning. I was offered a different perspective on the issues, by asking the same type of question to different persons in the organization (see also section 3.7. about the EFQM framework).

At the end of 2005, a new Rector had been appointed. During the years 2006-2007, the new Rector and her management team had to deal with internal difficulties and the integration into

the European Higher Education Area. In 2008 and 2009, several new initiatives were launched based on the decisions of the new management team. Since UOC is very much concerned about its image, I understood that it was difficult for them to allow me close insight into the way they were dealing with the new challenges. My impression was later confirmed by the Rector of another open university (E3).

Critical incidents brought me some insight into the transition period which UOC had experienced between 2003 and 2009. The PhD thesis of a UOC student (Senges, 2007) about knowledge entrepreneurship in universities, in which UOC was one of the four universities studied, in particular prompted me to reflect on my own findings to date. I noticed that Senges (2007) made references to my early research with regard to the management style of the first rector of UOC in his PhD thesis. My references to Senges' (2007) work can be found in Chapters 6 and 7. This student had access to documents that were not accessible to me at the time, such as the assessment report of the European University Organisation (EUA) and the consulting report of the Gartner Group, which advises global technology leaders. The assessment reports of the EUA have only recently become public documents. I also carried out an extensive search on the internet allowing me to supplement this information and to understand what had been happening at UOC.

In order to get the necessary data to continue my research, I also had to supplement my internal and external interviews in the second period with the methods and activities listed in Table 4, Chapter 4.

Table 4, Chapter 4: Sources of information in the second research period

- In-depth analysis of documentation such as internal documents, brochures, speeches, press and (published) presentations. For the vision of the Vice Rector of innovation, I relied on the notes I took during her presentation at the Conference of the European Association for Distance Teaching Universities (EADTU) in Poitiers 18-19 September 2008 with the title "Research based innovative networking in teaching and learning in Catalonia". This presentation was not among the conference documents made available after the conference. However I found out that the Vice Rector gave a presentation during the first Innovation Forum (Gros, 2007), which was published and which put my personal notes in perspective and provided a limited basis for validation.

- Information from conferences in the domain of open and distance education where representatives from UOC were presenting papers related to UOC.

- Data from direct observations: the difference in attitude during my first and second research period.

- Data from participant observations: during the first research period I discussed the problems arising out of the aim for internationalization and the demands from the faculty for more research.

- Extensive internet search, focused on UOC.
  -Several UOC departments such as the Office for Learning Technologies have blogs on the web, which allowed me to get some insights into what was happening.

  -UOC has an extensive daily reporting of news events on its own web site, which allowed me to further search for documents on the web referring to the new(s) events such as introductions to inaugural lectures at the opening of the academic year or introductions at the occasion of the launch of new centres.

  -Several UOC events, such as, for instance, the nomination of the new rector, were also commented on in the Catalan press and could be found in the archives on the web. The press articles were pertinent because they confirmed the insights I got from reading blogs and the UOC website.

- Consultation of research papers written by people working for UOC as a researcher or as a staff member. These papers and their authors, available on the web, are mentioned in the text. These papers were found by following references in blogs written by

> people connected to UOC or by looking at the UOC publications on the web.

- Analysis of documents written by the Catalan Quality Agency and by the European Foundation for Quality in E-Learning (EFQUEL). I compared my information with information available in on line data bases such as the one from UNESCO (provided by UOC Professor A. Sangra, 2006) and Re.ViCa, Reviewing (traces of) Virtual Campuses.

- Analysis of speeches of the Rector. From my interviewee E4, a rector of an open university, I got the confirmation that the new UOC rector had been very discreet about what happened in the transition period 2002-2009 and that she had only recently opened up. By analysing her introductory speeches at the beginning of every academic year, I could relate her statements to the other information I obtained about the difficult hurdles to be overcome.

Source: De Jonghe (2013)

On the basis of these various sources, I was able to construct a picture of the changes since my first research period. Chapter six contains the findings of my second research period.

By conducting my research in this way, I was able to have different units of analysis (different periods in time and different levels in the organisation and outside the organisation). This illustrates that the same case study can be based on more than one unit of analysis. If the case study also consists of analysing sub-units, it will be an embedded design (Yin, 2003, pp. 42, 45, 52). Through my longitudinal approach I built in a certain type of replication logic (Yin, 2003, pp. 47-51). Through my longitudinal approach (studying UOC at different points in time) I tried to replicate my findings from the first research period. The theory of interest would then specify how conditions have changed over time. The desired interval between the changes would need to be sufficient for the changes to appear. If I had carried out my second research period earlier than 2008-2009, I would have had a different view of the situation because the changes would have been less developed (see appendix 6 for the stages of my research process).

I was also able to validate observations via triangulation across multiple sources of evidence. I had the impression that my legal background and my experience in using different sources in proving an argument enabled me to construct a reliable picture of what happened between

the two research periods. In section 4.4.4 hereafter, I explain how the triangulation took place and how I dealt with overlapping or contradicting data.

4.4.4. Logic linking the data to the study question

Yin (2003, p 22) and others (Eisenhardt, 1989) recommend making a protocol for data collection since it is important to link the data to the initial question of study in order to avoid the situation where the evidence does not address the initial question. It was important to make sure that during my interviews I obtained answers giving me clarification on the issues in which I was interested. The information or data I collected for my case study research were mentioned earlier.

Quantitative data (number of employees, participation rates in other businesses, evolution of revenues and expenses, figures of institutional evaluation) were collected in order to clarify some qualitative data, such as the fact that they had little permanent faculty but a large network of outsiders supporting the teaching.

Hereafter I elaborate on the interview method. I was interviewing people because of their familiarity with the environment I was investigating, as informants or "experts" rather than as "research objects" (Glaser and Laudel, 2009). During my first research period, I pointed out the issues in which I was interested, in my case proposal to UOC (see appendix 7). These issues and questions were included in my semi-structured interviews. For interviewing, I used the format of the European Foundation for Quality Management (see appendix 8). This allowed me to come back to the same questions in a different wording (see also section 3.7. about the EFQM framework).

For my second research period, I was focused on obtaining information and data with regard to my research questions on the topics of research and teaching and learning, the core values of traditional higher education. I wanted to know how UOC had dealt with these issues since my first research period. It was rather difficult to ask questions in a structured way. From my previous research period and from studying the broader issues related to their venture, I expected some interesting developments (my emerging constructs). I was told that many things had changed, but at first sight their pedagogical and technological model was still functioning in a successful way. I realised very soon that I would be compelled to make an analysis of the changes that took place in several aspects of their functioning (see table of changes: table 10, chapter 6).

During the whole research period I used multiple sources of evidence in order to make triangulation possible. Triangulation can take place not only with data, theories and methodologies but also with investigators. In the first research period I had multiple interviewees; in the second research period, I discussed my findings with other researchers. Those methods were important to make my initial constructs stronger.

I kept extensive field notes about what was happening while I was collecting my data, using observational, theoretical and methodological notes (Schatzman and Strauss, 1973; Naumes and Naumes, 1999, p. 62). I also wrote down my own impressions. These notes were important during my data analysis phase, for instance in explaining the change of attitude between my two research periods.

Sometimes, my analysis based on the written documentation overlapped or contradicted other data collected (also mentioned in Eisenhardt, 1989, p. 538), such as from interviews, especially since I was interviewing at several levels in the organisation. This prompted adjustments to my data collection instruments and to my data sources during my enquiry in order to understand the contradictions. This enabled me to become aware of the fact that "to be able to carry out research" was becoming an issue with some faculty members.

Eisenhardt (1989, p. 539) discusses the legitimacy of such alterations and additions to data collection methods and concludes that it is allowed for theory building research because investigators attempt to understand each case in depth as far as possible.

4.4.5. Criteria for analysing and interpreting the evidence

Since I did not start my research with a theory or hypothesis, I did not follow any theoretical propositions and did not define or test rival explanations as suggested by Yin (2003). As a specific technique for data analysis, Yin (2003, p. 26, pp. 116-120) also proposes the idea of pattern matching described by Campbell (1975), whereby several pieces of information from the same case may be related to some theoretical proposition. He mentions other specific techniques, such as explanation building, time-series analysis, logic models and cross-case syntheses.

According to Eisenhardt (1989), analysing data is very important when building theory from case studies, but it is difficult and the least codified part of the whole process. She proposes within-case analysis, searching for patterns and the division of the data by data source. In section 4.4.2., I refer to the different influences on the work of Eisenhardt (1989). Her method

of continuous comparison of data and theory (leading to constructs), beginning with data collection has been influenced by a methodology in the social sciences, Grounded theory (Glaser, Strauss, 1967; Strauss, 1987), which consists of the development of a theory through the analysis of data.

I used the framework of the European Foundation for Quality Management (EFQM) as explained in section 3.7., and in the introduction of this chapter, to categorize my data from documentation as well as interviews. This framework comprises nine criteria or themes (questions are related to these criteria), which cover all the aspects related to managing an organisation. This categorization enabled me to see some patterns and code my qualitative information.

Although I considered it at some point, I did not use statistical software or software for qualitative analysis for analysing my data because the time span between the two periods of research, including the reflection which took place in between the two research periods, and the diversity in the forms of data material, were not well suited to statistical analysis. Easterby-Smith, et al. (2002, p. 129) argue that the investment of time, money and energy in such software may not be justified with small data sets from a limited amount of interviews. However, I was inspired by King and Neff Powell's (2008) paper "How not to lie without statistics" in order to build a more valid research design and to avoid pitfalls.

King and Neff Powell (2008) state that scholars in qualitative methods do not give enough attention to selection within case studies compared with which actual cases to study. I focused carefully on the selection of information within my case study. In my research project, "within-case" analysis consisted of writing up a case study for each of the findings from the two research periods based on the categorized material. For the first research period, this resulted in a teaching case. The categorization of the data according to the EFQM model made it easier to make a structure for the teaching case.

On the basis of the analysis and reflection after the first research period, I was able to select the issues (tension between research and teaching, and learning on a (virtual) campus) which would become the focus of my second research period. The latter period was more structured (the result of emerging constructs) and had a specific design in mind, although I had to adapt to the fact that access was more difficult during the second research period.

The second research period was a further step in refining my initial research questions (Table1, Chapter 4). After analysing my data using different tactics described above, I built

my hypotheses by sharpening my constructs (results in chapter 7). This meant that I had to refine my constructs and find evidence which measures the construct in each case. Therefore, I compared the data and the constructs on a regular basis, until the marginal improvement became small.

For example, for the construct "forces from the knowledge society with an impact on the strategic direction of the case studied", I compared the data of each research period with this construct and tried to find evidence for this construct. Among the forces at work, I identified the knowledge society with its social and economic goals and its roles for ICT with regard to lifelong learning and inclusiveness. During the first research period, I found out that they were a strong driver for acquiring government support for their project. During the second research period, I found out that the demands and the support of the government were even more crucial and that UOC's "public" profile had become obvious.

Another example relates to the construct "tension and the delicate balance between a focus on teaching and learning and a professor-centred view with a focus on research". I compared the data of each research period with this construct and tried to find evidence for this construct such as, for example, the demand for academic research compared with emphasis on student teaching/learning. During the first research period, I found out that discussions about the need for more research were taking place. During my second research period, it became clear that, despite the strong focus on teaching and learning, a research model had emerged.

At the end of chapter 3, I built some tentative constructs on the basis of comparing my data with the literature. The results of building my hypotheses by sharpening my constructs can be found in chapter 7 (after presenting and analysing the case data in chapters 5 and 6). The difference with hypothesis testing research is that the construct, its definition and its measure are not specified a priori (there is only a tentative construct), but rather after the data analysis. Another difference seems to be that there will be significant qualitative evidence.

A first step in building my hypotheses (eventually leading to theory) will be to verify the emergent relationships between constructs and the evidence in the different research periods of the case. The key difference with traditional hypothesis testing research is that each hypothesis is examined for each research period, not for the aggregate case. This is what Yin (2003) calls the replication logic; treating a series of cases or case periods as a series of experiments with each case (period) serving to confirm or disconfirm the hypotheses (different from sampling logic of traditional hypothesis testing).

For example (using the two examples above):

- Support from the government (in terms of finances or organisational autonomy) is more likely to continue if the public goals are being stressed.

- There is more emphasis on traditional values because UOC wanted to be a "real university" and sector forces emphasize research (sector associations such as the European University Association, networks of research universities, the European Higher Education and Research Area and the quality agencies).

In replication logic, cases which confirm emergent relationships enhance confidence in the validity of the relationships; cases which disconfirm the relationship may lead to refinement or extension of the hypotheses. When a relationship is supported, the qualitative data provides information on the reason or the causes for this relationship (the "why"). This is important for the establishment of internal validity.

Initially, I wanted to build a theory on the basis of iterating between my data and constructs. However, this would imply another look at the data in later stages of the development of UOC. Eisenhardt (1989, p. 545) argues that between four and ten cases is necessary to carry out this process while fewer than four cases makes it more difficult to generate complex theory. The empirical grounding with fewer than four cases is also less convincing, unless the case has several mini cases within it (Mintzberg, McHugh, 1985). In the future, I intend to continue my study of UOC and build new (mini) cases in order to refine the change model (see Figure 7, Chapter 7) based on experiences at UOC and pursue my attempt in theory building.

Eventually, by linking my emergent theory with the existing literature (e.g. on theories of change management), the internal validity, the generalizability and the theoretical level of my theory building from the cases should be enhanced.

According to Eisenhardt (1989) a weakness is that the theory becomes an overly complex theory because of extensive empirical evidence. I argue that this should not be the case if a well defined focus can be kept during the whole research process. She also points out another weakness, which is that the theory is a narrow and idiosyncratic theory, and not a "grand" theory about organisations.

I believe my approach is valuable since there is little known about the strategic role for ICT in teaching and learning. Roles for ICT are prominent from the case studied. It is a case of an

embedded technology strategy because implementation and organisation should follow its strategic direction. There is a need for a new perspective on roles for ICT, which could be useful for others.

4.5. Self-reflection on my research process and conclusions

It is important to identify the target audience for this study. Potential audiences could be students of changes in higher education and university leaders in charge of embedding technology in strategy. The research can be also of relevance to any organization facing similar tensions or dualities about core values.

Multiple investigators (note taker, interviewer) also view the issues with different lenses. In the first research period I could have added to my interviewees more people directly involved in the pedagogical and technological aspects. This could have led to a better understanding of the difficulties to overcome, which became apparent during my second research period. However, this problem could be overcome, because I was able to use supplementary data sources and critical incidents, which brought me some insight into the challenges UOC was facing.

The intermediary period between the two research periods 2002-03 and 2008-09 allowed me to organise a comparative investigation between two different periods of time. The replication logic I wanted to apply in my second research period, was interrupted by the message from UOC that "everything had changed", while I had the impression that the technological and pedagogical models were still implemented. Restricted access during my second research period could have been a problem. To mitigate this, I supplemented the case methodology based on interviews, with other methodologies to get data. Anything (e.g. field notes from newspaper articles, presentations, informal interviews), is data that helps the researcher generating concepts for the emerging theory (cfr. Grounded theory).

I argue that my "full-cycle" (a way of combining several methods) approach to research (Cialdini, 1995; Chatman, Flynn, 2005; Polzer et al., 2009), which exists in combining ("cycling between") multiple methodologies increases the rigour and the relevance of my work. King and Neff Powell (2008) made me focus on carefully selecting my information.

This HEI claims to represent a paradigm shift in the model for an HEI. It is still considered by some as an open or distance university, but it defines itself as "The University of the 21st

century". The students of this University could be called lifelong learners, although the University also tries to attend to the needs of the more traditional second-chance students.

There is a need to have research to test some actual models of universities that are already putting technology upfront in their strategy.

5. Description of Universidad Oberta de Catalunya (UOC) case (Data 2002-2003)

In this chapter I present findings from the first research period (2002-03). The analysis made during my second research period (2008-2009) will be discussed in chapter 6. As indicated in section 4.4.3, these two periods could be considered as different units of analysis, with the second period providing some validation of the findings of the first period.

The findings from my first research period are mostly based on the first round of interviews (December 2002), internal documents, brochures, presentations by UOC representatives and web documents from that time period (listed in appendix 10). The material was classified according to the nine aspects of the EFQM framework (explained at the end of chapter 3), which allowed me to carry out a thematic analysis. I compared my information about that time period with information available in online data bases, such as the one from UNESCO (information about UOC provided by UOC, Sangra, 2003, 2006), and with articles written about UOC, among others by Duart, Kiselyova (2003). As explained in chapter 4, I tried to gain empirical knowledge of UOC and understand the patterns I found, sometimes with contextual interpretations (intermediate position of inter-subjectivity), not going as far as Stake (1995), who puts the emphasis on the interpretation of the researcher (explained in section 4.3.3.).

Before presenting the findings of the first research period (2002-03), I give a brief introduction to Spain and its university system in section 5.1.The remainder of chapter five (from section 5.2. on) is based on my first stage work. Since I was studying a Spanish university, I first give a brief introduction to Spain and the Spanish university system in order to better explain the context in which the Universitat Oberta de Catalunya (UOC) operates. I also give a short profile of UOC before discussing my findings from the first research period 2002-2003. By giving this introduction and short profile, I was able to understand the complexity of this particular case. By using a disciplined method of enquiry, I was able to preserve the multiple realities of this case (see section 4.3.3.). I explained in section 4.4, that I used the five important components of research design identified by Yin (2003) as a framework for discussing some important issues linked to the political, social, historical and personal contexts of the case, which were creating the multiple realities of this case (Stake, 1995)

5.1. Spain and the Spanish University System

Spain has enjoyed modernity for the last three decades and has become an economy of the 21st century (Conti, 2008). It possesses people, expertise, infrastructure and an administrative framework which encourage industrial development and a stable political infrastructure.

In the past eight years Spain has been economically successful; rates of return of more than 20 % or 30% per annum could be made (Andrés, 2008). Following the recent financial and economic crisis, a bigger adjustment to slower growth in the coming years will have to be made. Deteriorating public finances have led to a downgrading of Spain's credit rating.

However, Spain has some positive features that will enable it to cope with the crisis. Information technology has been growing at a faster rate than in other European countries (Sanz, 2008). Spain is much more internationalized now than 10 years ago and, despite the decline in the construction and car sectors, the economy is, in many ways, much stronger than in the past (Pastor, 2008). In 2007, outward investments ($119, 6 Bn) are more than double levels of inward investment ($53, 4 bn) (Mallet, 2008). Software produced by the company Indra helps land three out of five flights in the world and Spanish IT systems are used by many oil and gas groups to monitor gas ducts and other remote installations. The life sciences are beginning to develop, but Spain could do better in order to create high value added, technological based industries (Mulligan, 2008).

In a recent interview, the Spanish Minister of Science and Innovation, Cristina Garmendia, made the following analysis of the situation[17]:

"The Spanish R&D expenditure is 1.2 % of GDP, half compared with France or Germany. The gap between the payment and the receipt of patent royalties is rather wide; less than 1 % of Spanish requests at the European Office of Patents. A recent competitive study by the European central bank states that share of Spain in the total world exports is 2.1 % compared to 11 % in Germany and 5.5 % in France."

"The reasons for this situation are complex and the solutions also. The banking sector was rather conservative and failed to develop key industries and utilities in the '60s and '70s. There was a lack of visionary entrepreneurs financing innovative products and/or systems.

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[17] The following sections are based on an interview by Mark Mulligan (2008) with Cristina Garmendia, Minister of Science and Innovation in the Financial Times, October 15.

The private sector is still reluctant to invest in R&D. The strong family system has many advantages but one of the disadvantages is the hindering of mobility. The housing and construction sector which went downwards from the second half of 2007, brought some easy money. Currently the question to be solved is how to implement a culture change, which will lead to more steady ways of earning an income."

The following measures are being proposed by the Minister:

- The economic model should be rethought.

- The heavy handed bureaucracy should be downsized.

- The private sector should develop a necessary risk culture which could replace the existing civil service culture.

- Excellence should be sought in five sectors: life sciences; biotechnology; nanotechnology; renewable energy; and sociology and communication.

For her, the transfer of ideas and research into the public domain will be a success indicator.

Garmendia also wants to find a solution for the following problems:

- On-the-job training seems to be weak.

- The education system has been undervaluing excellence.

- Primary schools and secondary schools are not performing well.

- The public university system needs an overhaul.

For the Minister the three main Spanish Business Schools (IESE, ESADE, IE), which are in the Top 10 of the European League, should be an example for the public universities. She stated that they:

- Encourage mobility of professors and students.

- Embrace student teaching methods and teach them how to learn.

- Embody the importance of continuous learning.

The Minister was convinced that the Bologna Process will force some of the changes necessary in Spain. According to her, professors and students should be able to choose a

university on their merits, and scholarships should be portable.[18] In 2007, the Spanish investment in higher education was 1.2 % of GDP.

The process of decentralisation from Central Government to the regional level, which took place in Spain over recent decades, is reflected in the composition of public expenditure of the regions. Substantial regional differences in capital expenditure exist between the seventeen regions in Spain. The prosperity of a region varies depending on the capital expenditure undertaken by the public sector. Expenditures vary from Euro 600 per head in the Comunidad Valencia to more than EUR 1600 per head in Castilla y Léon (Catalina Rubianes, 2009). For example, in 2006, investment in research and development was 1.2 % of GDP for the whole of Spain but 1.43 % for Catalonia[19]. With respect to research and development, only four regions (Madrid, Catalonia, Basque Country and Navarre) are above the national average. Some of the most prosperous regions also appear to be some of the hardest hit by the economic crisis, like Catalonia, which hold one of the two biggest metropolitan areas of the country. In the first five years of the current economic crisis, Catalonia experienced a 15 % job loss. The construction sector lost 51 % of its total jobs in this period (Catalan news agency, 2012).

Spain moved to a system of mass education in the early 1980s and now has a participation rate close to 45 % in higher education. A 2009 report[20] on Spanish universities mentioned the high dropout rate (between 30 % and 50 %) and the long period of study before graduation. According to the same report, research and technology transfer are positively contributing to economic development. The position of the teacher, graduate access to the labour market and the management of universities should receive more attention.

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[18]   As mentioned before, the previous sections are based on an interview by Mark Mulligan with Cristina Garmendia, Minister of Science and Innovation in the Financial Times, October 15, 2008.

[19]   Data from: An Overview of Catalan Higher Education System. Government of Catalonia. Ministry of Innovation, Universities and Enterprise. Commission for universities and research. (based on 2005 – 2006 data).

[20]   "La contribucion de las universidades espanolas al desarrollo", Fundacion Conocimiento y Desarrollo (CYD) mentioned in Asenjo, M. "La universidad acumula una tasa de abandono de hasta el 50 por ciento" in ABC, April 4, 2009. ("The contribution of Spanish universities to regional development" in "The universities have a drop out rate close to 50 %").

The Spanish university system was built according to the Napoleonic, bureaucratic system (Mora, 2000, p. 171), which means that for most of the 19 C and 20 C, the Spanish university system was regulated by the State. In the 1980s (university reform act of 1983), attempts to move away from highly centralized control of higher education strengthened the responsibility of regional governments and the autonomy of higher education institutions. Currently, the 17 autonomous regions have authority over their universities (Catalonia since 1984).

Higher education is regulated by a complex framework of national and regional laws. The University Law of 2001, which established the guidelines with regard to the full integration of the Spanish University System in the European Higher education Area (Bologna reforms), was modified in 2007 (introduction of external quality assessment mechanisms in the university system).

After the university law of 1983, the staff structure moved from a traditional chair system ('catedraticos' or permanent professors, who controlled departments and subject areas) to a department model with university departments and new categories of academic staff. In the early 1990s, a salary system with productivity bonuses (Mora, 2000, p. 186) and continuous individual evaluation of academic staff was introduced (Enders, 2000; Mora, 2000, p. 181). Academics were still treated as State Civil Servants. They could, however, engage in commercial (e.g. consulting) activities (Mora, 2000, p. 171).

Vacancies were rare due to the relatively young age of most of the professors. Besides the problems with non-tenured staff (contract staff with provisional job, no civil servant status), the recruitment and promotion of tenured staff (civil servant status) was hindered by a tendency to favour local candidates. As a result, current positions and levels of academics did not correspond to the real merits of academics.

It seems that rigid rules were hindering developments for a dynamic academic profession. A complex four-level structure of decision making, for instance on university personnel issues, seemed to be a permanent source of conflict. The four-level structure comprises the central government, the regional government, the universities and the collegiate boards of universities. Mora (2000, p. 167) explains the influence of this structure on personnel matters:

- The central government decides on general personnel policies (basis structure, workload and salaries). This means that employees in the universities are in most

cases civil servants whose salaries and working conditions are set by the central government.

- Regional governments are responsible for financing universities and indirectly for the payroll in public universities. Decisions made by the government on salaries have direct implications on the costs that regional governments have to bear.

- Universities can establish their own personnel policies, such as the number of staff in each category of academic personnel or the actual workload of personnel. Decisions on staff numbers also have an impact on the regional level.

- Decisions on personnel matters taken by universities are made by the staff through their collegiate boards.

He concludes that, despite the process of decentralisation and autonomy, problems still existed (Mora, 2000, p. 190).

The current categories of tenured and untenured positions and the organisation of university departments were established in 1983. Regarding this aspect, the laws of 2001 and 2007 have only reformed the way the candidates to a position are selected. Universities now have more freedom in choosing applicants for a position. Before the 2001 law, tenure implied becoming a civil servant. The 2001 law introduced two categories of tenured positions, which did not imply one has to become a civil servant: 'Professor Colaborador' (disappeared with the law of 2007; only exceptional appointments until 2013), and 'Professor Contratado Doctor' (equivalent to reader in the UK). Non-tenured positions still exist (e.g. part time instructor, who has another job; a doctoral student working as a teaching assistant or just promoted as a 'doctor').

Following the Spanish University law of 2001, the ensuing Catalonian law (2003) decided on university planning in Catalonia. The 2003 law detailed the competences of the Catalonian regional government and established the legal basis for external quality assurance by giving official status to the Quality Agency of Catalonia. The Spanish law from August 13, 2007 adapted the structure of university studies to the European Higher Education Area (3 cycles: first degree, 240 ECTS credits; master, 60 or 120 credits and PhDs).

The number of students in Spain had levelled off in the second half of the 1990s (Mora, 2000, p. 167, 189-190). However, despite predictions of fierce competition for students in higher education, the demographic change (a drop in young people of around 40 % over a decade,

1998-2008) did not led to a shrinking student population (Warden, 2008). The reason for this is that people were staying longer in school and new type of studies (eg market research techniques) attracted more young Spaniards to higher education (Warden, 2008). In the autumn of 2008, Spanish students protested against the implementation of the Bologna Process, which they saw as a privatization of state universities. They were also afraid that student fees would be introduced, and that the new degree structure would not enable them to work while they were studying. Many Spanish students work while studying. They also feared that employers would require a masters' degree (not the intention of the Bologna Process!) while previously they could get a job with a bachelors degree of 5 years. This protest could be the reason that the first degree in Spain now requires 240 ECTS credits. Academic staff were also having problems with the reduction or reallocation of teaching hours (from five years to four or three years) for a bachelor degree according to the Bologna reforms.[21]

The factors indicated above, such as the high drop-out rate, the habit of working while studying, weak on-the-job training, the weak school and public university system, the career obstacles for university staff, and now also the failing economic system (see above, the structural problems have been made worse since the recent economic crisis), might suggest there is an urgent need for life-long learning in Spain and in Catalonia.

Excellent private higher education institutions exist in Spain alongside public institutions. In 2007, the Spanish university system consists of 50 public and 25 private universities, compared to 34 in 1984 (OECD, 2010). Catalonia went from 3 universities in 1990 to 12 universities in 2003: 7 public universities, 4 private and one 'open university', UOC (established in 1995), which collaborates with the other universities and also complements them. Collaboration (translated as "coordination" from Catalan) among Catalan universities to ensure efficient and effective use (translated as "administration" from Catalan) of public resources, is promoted by the Catalan University Law of 2003 (article 4, e).

The total undergraduate student enrolment in Catalonia was 238,000 for the year 2007 (Barà Temes, 2007). There were 30,000 university graduates in the year 2005-2006. In the year 2005-2006, the academic staff totalled 16,286 and the administration and services staff, 8,484. Barcelona with four public universities and three private universities, has a population of

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[21]   Information based on ACA (Academic Cooperation Association) newsletter, December 2008.

5,309,404 . Outside Barcelona there are three public universities and one private university for a population of 2,512,640. [22].

During my first research period 2002-3, I learned that, for every academic job opening at UOC there were 30 candidates. I took as an indication that the traditional university climate was still not considered favourable for young people. During the interviews, I did not elaborate on the problems or tensions in the relationship of traditional universities with the government regulator. However, I learned that decentralisation had not solved problems such as having to wait for a job opening before receiving a nomination (promotion) and having to pass a state examination to get it. I also learned that younger people like the management experience they obtain while organizing learning services. As indicated previously in section 4.3.1., the focus of case study research can be on actions and interactions in a collectivity. UOC can be considered as such a collectivity. Referring to Ragin (1992, pp. 8-9), the case conceptions I used the most in this case study are "cases are found" and "cases are made". During my research process, I identified the empirical bounding of the case and I gradually discovered the theoretical constructs based on empirical evidence (explained in section 4.3.1.). I see my case study as a result of "casing" in order to link the constructs based on conclusions from the literature (see Chapter 4) to the empirical evidence in this chapter 5 and chapter 6.

5.2. UOC, a newcomer in the Spanish University System

In the academic year 1995-1996, UOC launched its teaching by means of a pilot course with 200 students, 100 of them enrolled in the Educational Psychology course and 100 in Business Studies. The main purpose was to build an educational community and offer a distance degree programme through the "first class" (see section 5.5.4.) electronic mail system (Benvic, 2000, p. 8). The experiment was evaluated positively by staff and students and it motivated staff, which at the time numbered 100 (of which 30 administrators or professors), to continue and expand their activities. Feedback on the programme was given through the electronic mail system and the teaching and learning process was adapted according to comments received from students (Benvic, 2000, p. 19).

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[22]   An Overview of the Catalan Higher Education System. Government of Catalonia. Ministry of Innovation, Universities and Enterprise, Commission for universities and research. (based on 2005 – 2006 data).

Despite the focus on delivering learning services, UOC also wanted to carry out research. This choice, and the challenge in the implementation of their learning model based on digital technologies (using the possibilities and benefits of teaching and learning through the internet) and the implementation of its research model, prompted my curiosity in the first research period which will be discussed in the remainder of this chapter.

The institution achieved international recognition by receiving, among others, awards for being the best virtual and distance university in the world (International Council for Open and Distance Education, ICDE Prize 2001) and for educational quality (OEA Prize 2004, awarded by the Organisation of American States). They have also been distinguished with the UNESCO Chair of E-learning.

Courses at UOC

UOC[23] offers first cycle (bachelors), second cycle (masters) and PhD degrees in several fields. In 2002, the official (recognized and subsidized) degrees were going to be converted to Bologna degrees. Non-official courses, such as post-degree programmes, extension courses, language courses and business training programmes are also available. Students who are lacking the legal requirements to receive a higher education degree can take non-degree courses and start building their competences. It seems that there is no law yet in Spain which validates either prior experiences or informal learning which could lead to wider forms of entrance in the higher education system.

In 2002, the fields or disciplines UOC offered were: economics and business studies; psychology and educational sciences; law and political science; humanities and language and literature; computer science and multimedia; and, information and communication sciences.

In chapter three (Roles for ICT), I observed that despite the 'conflicted' attitude towards e-learning and some negative experiences with ICT, it is still a significant driver for restructuring academia. Few similar virtual campuses (intending to be like other universities but using the internet) have developed in other places. The difference with the Open University in the UK (established in 1969) is that since the beginnings of UOC in 1995, the teaching and learning activities have taken place exclusively online via a virtual campus built

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[23]   See: http://www.uoc.edu/portal/english/estudis/oferta_formativa/tots_els_estudis/index.html (October 5, 2011)

for this purpose. When the Open University in the UK started, the meaning of "open" referred to "universal access to knowledge", access for everyone without academic of legal barriers. Radio and television were used to deliver courses. The Open University of Catalonia defines "open" as open acces and free access to knowledge through the internet (Corcoles et al., 2006).

5.3.   A public - private construct

In this section, I explain how a demand by the Catalan government resulted in negotiations, allowing UOC to obtain some real autonomy while at the same time setting up an appropriate governance structure.

In the early 1990s, the Catalan government had been eager to address the detected need in the region for distance education, while overcoming problems related to distance and physical handicaps. At first, the Catalan government negotiated with the Spanish authorities for control of UNED (the National Distance University of Spain, based in Madrid) in Catalonia. However, as UNED's faculty members were not too keen on devolving to Catalonia, the Catalan government decided to start its own distance education[24]. As a result, UOC became one of the public universities of Catalonia (12 since 2003).

In 1993, Gabriel Ferraté, a man with a clear vision and considerable experience, was asked to set up this Catalan distance university. He had been an engineer and entrepreneur early in his career, and later became a rector of traditional Spanish universities as well as a business and political leader[25]. Ferraté accepted the Catalan government's offer to set up a distance university from scratch, provided that he could do it "his way". He has had more than twenty years of experience in traditional universities, which had given him a clear vision on which course he wanted this new institution to follow. He wanted to set up a university for the people, unhampered by the legacies of traditional universities. A contract with the government was agreed upon and performance indicators established.

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[24]   See Appendix 10, Section Policy and Strategy: Documents related to the establishment of the Foundation for the Universitat Oberta de Catalunya, dated September 1994

[25]   See Appendix 10, Section Leadership: Biographical information

Ferraté had discovered that public organisations were often in a disadvantaged position to take timely decisions because of many obstacles such as government rules and lengthy debates at all levels and in different committees. As Ferraté put it when I interviewed him:

> *"In traditional universities it took me three years to get anything done because of all the obstacles".*

Therefore, if he wanted to combine effective decision-making with governmental support, he had to push the legal forces to the limits, by inventing a completely new (and complex) legal public/private framework, allowing easy adaptation and swift reaction to the demanding needs of an evolving society.

In 1994, the Foundation for the Universitat Oberta de Catalunya (FUOC) was established, consisting of four private partners. This private founding would allow for a more efficient company-like structure and organisation. The Catalan Autonomous Government was added immediately afterwards (becoming a majority member) to enable public financing (of the Catalan degrees). The Foundation was to be governed by a Board of Trustees which would delegate some of its functions to a Permanent Commission, responsible for the everyday affairs of the Foundation. The Rector of UOC and the General Manager of UOC, who was also the director of the FUOC, were members of this Commission. The Board of Trustees was assisted by the Consulting Body of the Foundation, which consisted of members representing a broad cross section of Catalan society.

This governance structure was key to setting up this new university. The organisational and legal framework was consolidated in the academic year 2002-2003. In short, UOC could build a specific relationship with the government through an inventive legal framework, allowing a company-like managerial model and effective decision-making, which represented a new organisational model and strategy for a university.

5.4.   UOC's organisational structure in 2002-2003

> *"Others will have difficulty to deliver online education because their organisational model is still the same old model!". Magi Almirall, Head of Intranet Development, UOC.*

In 2002, the UOC organisational structure (see Figure 3, Chapter 5) shows a balance between the academic dimension, the resource dimension and the programmes and projects dimension. This organisation was set up in order to be more flexible than established universities (see

previous section 5.3 aims of the first Rector). UOC wanted to innovate and improve the functioning of universities with regard to effective decision making.

Figure 3, Chapter 5: The UOC Organisational Structure circa 2002

Academic Dimension

- Directors of Studies

- Academic Staff (Research and Teaching)

Governing Council

Resource Dimension

- Human Resources

- Programme Managers

- Business Managers

- Marketing

- Finance

- Technology

Programmes and Projects Dimension

- Methodological Innovation
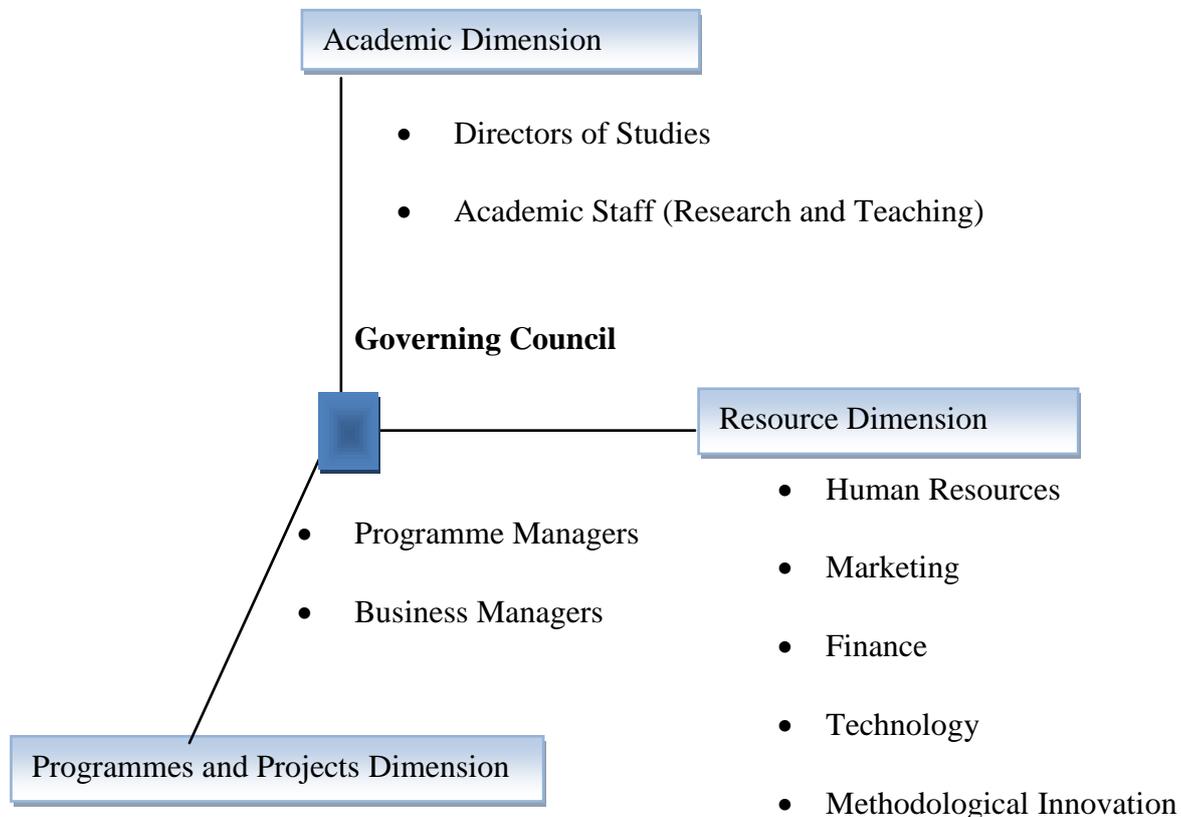
Source: De Jonghe et al. (2003 a)

The academic staff constituted a first dimension in this three dimensional organigram/structure. In general, they were responsible for the delivery of both the official (regulated, recognized and subsidized by the Government) and the non-official degrees (the latter being the "Post-Degree Programmes", the "Extension Courses" and the "Business Training Programmes"). The latter were studies not regulated by the government, leading to an unofficial degree recognized by the granting university. The granting university regulates access to their own degrees and fixes the academic fees.

The second dimension of the organisational structure refers to the resource dimension, being UOC's own internal resources (e.g. human resources, marketing, finance, technology, methodological innovation and the library services). Consisting of over 400 persons, it had

the goal to offer the highest level of services, both to the students and the teaching staff, and to the general public and the governmental institutions.

The third dimension of the organisational structure includes the managers (programme and business managers) of the university, representing the business units with a bottom line responsibility. They act as facilitators, constantly trying to translate UOC's strategy and the visionary ideas of the Rector into realistic targets.

UOC had a governmental structure consisting of single-member bodies of government that were directly related to the Rector (President). It was a model of central management fully dependent on the administration. The Rector was assisted by a (General) Manager, responsible for the everyday management of the university and supported by a management team. The Vice-Rectors (Vice Presidents) were also reported directly to the Rector but did not have their own management team to support them.

The internal organisation consists of collegiate bodies of government. The highest is the Governing Council with the Rector, the Vice-Rectors and the General Manager. The Council had the objective of continuously balancing the university towards a stable equilibrium (equal power) between the three different dimensions. This equilibrium could not be maintained because the role of the administration became a pertinent issue (Senges, 2007, pp. 205-208, 215). This original model has since been replaced by a new one, as I discuss in chapter 6.

A strategic commission (20 people, representing different divisions of UOC) is supposed to inform and discuss strategic issues "bottom up". There is also a knowledge commission in charge of academic matters and an operational commission. From my interviews with academics I had the impression that some frustrations were growing. Some individuals experienced a conflict between their own goals and the organisational model and culture which was, according to them, "more product or output oriented". As one professor mentioned:

> *"Will it be possible to maintain the motivation of the professors, who are very constrained by the organisation? Neither their career path nor the criteria for increases in salary are clear. How do you balance the situation of each professor?"*

The organisation of the university was linked to the UOC Group companies, a network of different private companies available to help UOC to achieve its mission. The complex nature of UOC's daily reality made it essential to collaborate with other organisations in order to

achieve the best results, for example with regard to the creation of qualitative teaching materials or with regard to innovative experiences while introducing its e-learning solutions to other sectors.

Gradually, over time, the entrepreneurial spirit of UOC's leadership, resulted in different strategic alliances and equity stakes in other organisations, leading to the development of the UOC Group. This network, in which UOC plays a very active role, offers mixed or shared activities to assist the University in achieving the objectives of service, quality and universality to which they were committed.

> *"The development of this network of companies originated from an entrepreneurial spirit of exploring new opportunities in the market. Its creation was legitimate as the companies' profits were reinvested in the university"* explained Esquerré, Deputy General Manager.

In the next chapter I will briefly explain how some of these companies caused some unexpected difficulties over time.

5.5.   Innovative aspects of student learning at UOC

5.5.1. The student considered as a client

During the first research period, 2002-2003, UOC had not yet integrated the Bologna reforms. Most Spanish universities started adapting to the reforms in 2008-2009. Nevertheless, UOC was already fully aware of the importance of lifelong learning in the knowledge society and of the opportunities of the virtual world. UOC was also concerned with giving flexibility to the student with regard to the place and the pace of study.

In this first period, students at UOC were part of a changing student population and may be described as lifelong learners for whom web-based learning had already become a solution. (see Table 5, Chapter 5).

Table 5, Chapter 5: UOC Student profile during first research period 2002-2003

Gender	Women	Men
	45 %	55 %

Professional situation	Employed	Unemployed
	95 %	5 %

Private situation	Single	Not single
	60 %	40 %

Family situation	With children	Without children
	17 %	83 %

Age	18-25y	25-29 y (33%)	70 y

Source: De Jonghe (2010), adapted from annual report UOC, 2002-2003

UOC built a client-focused university, where the students were at the centre, promising a premier service: "El estudiante, el primero" (Duart, Sangra, 2000, p. 31). UOS employed an innovative pedagogical model by using the potential of ICT and focusing on the client relationship with students. The client focus means that they adapt the learning path of the student to the needs for flexibility with regard to the pace, the time and the place of study, and for personalisation (possibility of adapting the contents and the learning process to the prior knowledge of the student). UOCs pedagogical model, processes and teaching were organised in order to allow this flexibility and personalisation.

One clear choice that had been made from the beginning was the use of a virtual and asynchronous (a learning system that can be accessed anywhere and at anytime) teaching model (see Table 6, Chapter 5), allowing students to learn in an effective way without being impeded by barriers of space or time, and offering flexible learning, which suits their lifestyle.

> *"Our first aim is to make sure that each person can satisfy his or her learning needs. Therefore, we use information technologies, allowing us to overcome barriers of space and time. Furthermore, we offer full support to each student by using an educational design, based on personalisation of the student"* *(Mission statement UOC, October 2002)*

They arrived at this position because Gabriel Ferraté, who set up UOC and became its first Rector, wanted to make full use of the possibilities of the internet which started to develop in the nineties. New forms of transfer of learning content, of student-lecturer relationship and of working patterns styles of students became possible through the use of the internet.

Table 6, Chapter 5: Asynchronous Teaching Model

Coincidence in Space of teacher and student	No	Tele-Education	Virtual Campus
	Yes	Traditional Campus	Support Centre
		Yes	No
		Coincidence in Time of teaching by teacher and learning by student	

Source: De Jonghe et al. (2003a)

The teaching philosophy was based on three basic elements:

- The central position of the student.

- The student relationship with tutors and counsellors, who play an important role in the teaching process and the student assessment.

- The role of the "professor-manager" (further explained in section 5.6., who prepares the educational materials but does not teach or assess.

Around these three pillars, four complementary elements revolved: a virtual library, meetings (twice a semester face-to-face, not virtual), support centres, and social and extracurricular activities.[26]

During the interviews, I learned that students at UOC needed to have appropriate equipment, have information online, register online and receive learning materials on line,[27] and take part in UOC meetings at the regional support centres. From the analysis of written documents[28], I also found out that face-to-face meetings brought students and teaching staff together at the beginning (presentation meeting) and at the end of each semester ('synthesis' meetings). These meetings consisted of academic activities (such as counselling and tutoring sessions, explanation of the course outline and lectures) and complementary activities (such as workshops and cultural activities). During interviews with academic staff members, I was told that 35% of enrolled students attended the academic activities.

The regional support centres were without lecture rooms but with a UOC representative present, played an important role in this service oriented model. The regional support centres often collaborated to promote a dynamic variety of extra-academic activities. At the same time, they had to investigate the needs of the students and the public, in order to facilitate further improvements of the UOC institution. They attracted new students. They provided physical space if necessary for face-to-face meetings about the study programmes, during which questions could be asked (as explained above). They were used for organising exams, although these were increasingly replaced by continuous assessment. This was a pertinent issue given that distance learning through ICT still required exams according to the law.

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[26]   See also: in Appendix 10. General information: document "21 st century literacy in a convergent media world. UOC" (no author or date mentioned, collected during research period 2002/2003)

[27]   Paper versions of some manuals were provided at the time (2002-2003) because they realised many students printed them at home.

[28]   See Appendix 10. Processes: Teaching and learning: first two documents.

5.5.2. The virtual campus

The design of the virtual campus is at the core of the pedagogical model of UOC.

> *"Our campus is a real campus, a special place where we try to stimulate all the useful functions of a face to face campus". (Gabriel Ferraté, April 2003).*

This campus could be seen as the principal communications area for teaching, communication, tutorial and student support, as well as for cultural, social and personal communication. It therefore provides most academic and non-academic services found on a traditional university campus. Through the electronic environment of the virtual campus, students were able to communicate in the "classroom space" with each other and with their tutors and counsellors (see next section 5.5.3.). Through the virtual communication environment, students and teaching staff had access to resources, which were intended to guide students through the learning process and enable them to manage their own learning process. The virtual campus permits access, among other things:

- to the "classroom" space (consisting of four blocks: planning, communication, documentation, evaluation),

- to formal and informal communication (creation of student associations with discussions areas, community forums to discuss topics of common interest, notice boards, purchase cooperative, employment office with job offerings, information on cultural activities)

- to administrative services (secretariat, regulations and study plans, registration for new courses and examinations, consultation of results, modify contact data, request certificates, ask questions),

- to the virtual library (with use of internal and external databases) and to a publishing service, EDIUOC, the UOC publishing house.

Several characteristics mainly define the success of the virtual campus:

Firstly, and as already mentioned above, it allows an asynchronous approach towards education, which is one of UOC's greatest advantages as most UOC students need great flexibility in the organisation of their study time.

Secondly, all students are trained and accustomed in the use of PCs, internet and multi-media material. Before enrolling, they are allowed access to a special place, the introduction

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classroom to the virtual campus, where they can become familiar with the main spaces and functionalities of the virtual campus and the virtual learning environment. Student acceptance is indeed an important factor for successful implementation of instructional technologies (Martins, 2004).

Thirdly, psychological aspects of learning (see chapter 3: aspects related to time, place, community and materials, Crook, 2002) are integrated into the virtual communication system. This virtual communication system avoids student isolation, traditionally associated with distance education, by providing a 'virtual space', uniting all members of the UOC community.The use of metaphors such as 'virtual space', to indicate a 'place' on the internet, reflects the reality of the internet (see section 7.3). Human interaction and communication between UOC members takes place in this space. For example, the virtual campus gives access to student cooperatives and to the club UOC, a community of people with a common interest in learning and knowledge.

Fourthly, the virtual campus encourages cooperation with other networks:

- The concept of the "meta-campus" as a space is being promoted, where relationships with universities worldwide can be developed and students can take virtual courses at other universities. In 2002, UOC was at the beginning of its internationalisation strategy. It was trying to enrol more students and to bring the existing programmes to the international Hispanic market. UOC realised that ICT could play an important role in the internationalisation process because of the borderless nature of the internet. It was reflecting on pedagogical quality and the need for adaptation of materials. This would include the contextualisation of the programme content and joint degrees based on the common construction of programmes. Attention to cultural diversity and multilingualism would be part of this internationalisation process (Duart, Kiselyova, 2003).

- Access is also possible to the "campus for peace and solidarity", set up in the year 2000. It is a development co-operation programme through which UOC provides technology transfer, virtual training and consultancy in order to fulfil its ethical commitment to society (e.g. Camps et al., 2004).

5.5.3. The central position of the student and their relationship with tutors and counsellors

UOC took great care to approach its students in a very different way than the usual way in established universities, by allowing the student to choose the place and the pace of his study to suit his/her personal circumstances and give the necessary support to reach his/her goals . UOC treated students as if they were clients, deserving an education of the highest quality. The main objectives were to connect students, teachers and central services and to overcome barriers in time and space, which would allow students to study at their own pace.

Thus, a student centred learning process was adopted. Duart and Sangra (2000, pp. 23-49) explain how the differences in application of ICTs, could lead to three theoretical models: media centred, professor centred and student centred. Student centred models allow students to:

- have freedom in taking advantage of the support offered,

- plan their learning process, and

- regulate their pace of study.

In media centred models there is a focus on the technological tools used. The teacher becomes a provider of content, which can be used by the students at the time and the place of their choice. The role of transmitting and assimilating knowledge is taken over by the technology (Sangra, 2006).

Professor centred models focus more on the teaching than on the learning. Teachers are the only transmitters of knowledge. They use the new technologies to expand the scope of their lessons. Usually, this does not imply any change in the educational concepts (Sangra, 2006).

UOC built an infrastructure focusing more on the student than on the teacher and more on the teacher than on the technologies. The new technologies were meant to serve the student and the teacher. In order to serve the student well, high pedagogical quality and personalised support were necessary. Duart and Sangra (2000, p. 49, Note 8) explain how UOC facilitated

the learning process by bringing into the learning model two roles (see Table 7, Chapter 5 hereafter): "tutors" (subject- based) and "counsellors" (student-based)[29].

Table 7, Chapter 5: Basic structure of organisational/pedagogical model; The Role of Tutors and Counsellors at UOC

	Subject a	Subject b			Subject m	
Student 1						Counsellor 1
Student 2						Counsellor 2
Student n						Counsellor n
	Tutor a	Tutor b			Tutor m	

Source: De Jonghe et al. (2003 a)

Tutors

'Tutors' are external specialists in a specific study subject. They are in charge of teaching the subject module, which means that they explain the content, present the learning material to the student and explain how to use it. They are usually faculty members at other universities or professionals (lawyers, business executives) working for UOC on a freelance-basis. They guide, stimulate and assess the student's learning process with respect to a certain subject. Online tutors (teachers) view their roles as a transition from subject expert to performance coach (Alvarez et al., 2009). During my interviews at UOC in December 2002, I learned that in general, a tutor would be responsible for a group of up to 70 students. Although tutors are not required to be constantly online, or do not follow a specific time schedule, UOC expects

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[29]   See Appendix 10 : Section, People: Document " Ser consultor en la UOC" (internal document for preparation of teaching collaborators)

all messages or enquiries from students to be answered within 48 hours. The tutor has to clarify module content and answer questions from students about this content. Tutors may also initiate discussions and debates. Tutors also send exercises and exams through electronic mail and give students feedback on these. Tutors are responsible for the continuous evaluation of the student (Interviews December 2002; Benvic, 2000, p. 18-19).

It is the students' responsibility to build on the learning materials provided (initially paper text as in 1995, multimedia materials could not be delivered through the internet), provided and develop their knowledge of the subject using multimedia aids and by participating in the activities through the virtual campus. The virtual class can be used to ask questions, for discussions and debates and for reading announcements about schedules or explanations about concepts related to a module subject.

The relationship between the student and the tutor was based on a well-structured working plan (available in the study plan and academic regulation module, part of the telematic academic management system of the virtual campus), offering the student a clear vision on how the semester (typically 13 class weeks) would look like in terms of course content, workload, study material and assessments. The working plan consists of guidance on how and when the learning materials should be used, when to read the readings or watch the video for each educational unit. The working plan could be considered as a "learning contract" (see section 2.4.5.) when the student enrolls for a course through the matriculation module (another part of the telematic academic management system of the virtual campus). Assessment was significantly continuous, as it was made up of series of programmed activities that take place throughout the entire semester, reducing the weight of the final examination.

The role of the tutor within the student's learning process is crucial since he/she is the main teacher of the student for a specific subject. He/she fulfils the tasks that are carried out by a lecturer in charge of a specific subject during a year (semester) in an established university. Given this important role, special attention was given to the selection of tutors. The UOC professors (as will be explained below) were responsible for selecting external candidates, who possessed a combination of experience and open-mindedness to deal with processes organized in a different way that in other universities.

Tutors (either academics or professionals) were always 'recruited' on the basis of a six-months contract, which would be either indirect (through the institution in which the tutor is

full-time employed), or direct (in the case of a high-level professional). In general, as UOC had been founded with help of the Catalan Government, agreements with regard to the use of professors from other universities as counsellors/tutors for UOC were relatively easy to establish. As explained in section 5.1, academics from the traditional universities often had no tenure, and being employed on short term contracts, were interested in other opportunities.

Staff development was considered important at UOC. Training programmes were organised in order to help tutors develop the abilities and techniques necessary to work in an organisation implementing educational concepts in a context of new ICTs. The Human Resources Department at UOC set up a training plan for staff consisting of professional development, abilities and techniques with regard to ICT and languages. The training costs were paid by UOC and the training took place during normal working hours. Some people were trained at other institutions with regard to specific subject matters (Sangra, 2006). Tutors, once recruited, initially receive a one-year training (on the job, not full time) on the pedagogical principles, the tasks and the working climate at UOC.

In general, tutors belong to a particular team, thereby stimulating group learning and easing the training process (learning by doing). Among the main projects of interest for tutors were:

- Teaching action support: Because most tutors had little experience in teaching in online environments and because many of them were not used to working with ICTs, their training was important[30]. UOC provided a "micro campus" on the web where tutors have access to virtual meeting rooms, information and news, to training, to learning materials and to information about the learning process, the tools for evaluation and for creating resources.[31]

- Telematic academic management: This is an application, which enables the management of academic and administrative processes relating to students, teaching staff (tutors and counsellors) and users from the administrative staff (student care,

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[30]   From the slide presentation "Learning in a virtual environment", see appendix 10, Processes, Teaching, document 1.

[31]   From the slide presentation "Learning in a virtual environment", see appendix 10, Processes, Teaching, document 1.

coordination and teaching management). Students have access to study plans. Registration for new courses and exams can take place. Results can be consulted. Contact data can be modified. Certificates can be requested. Specific questions can be submitted and will be answered. The purpose of this system is to manage all the administrative tasks in a virtual way, through the web from home at any time (UOC website 2003-2013; Benvic, 2000, p.17).

- Methodological resources assistant (MRA): This is a project set up by UOC with regard to the application of instructional design to web-based materials. It is important to have well structured materials which are designed from a pedagogical point of view. Authors and other teaching collaborators need to be trained in elaborating teaching material for distance teaching. A suitable resource must be chosen for each learning objective or training need. The MRA offers the possibility to look for resources and access reports on these resources. These reports provide information about the category the resource belongs to and the goals that can be reached by using it. The description of the resource (structure, stages, functioning) is given. Guidelines are given to improve the possibilities of the resource. Bibliographical references are also available. Templates and programmes to create (additional) resources in an easier way are to be found in the MRA (based on Sangra et al., 2000).

Counsellors

'Counsellors' were mostly external collaborators. They were the academic advisors of the students and were supposed to have a daily contact with the student by e-mail, telephone or personal visit. They introduced students to the UOC, followed their academic career, examined their motivations and assessed the progress of their studies. They advised the student on his/her time schedule based on the requirements of the course. They were selected on the basis of demonstrated academic or professional experience in the field of the studies being counselled. They were fully informed about the working plan of the student (see above) and ultimately became the personal counsellor and primary spokesperson (mediated on behalf of the student with the tutor in case of difficulties) for the student throughout his or her entire educational process at the UOC. The "counsellors" were to make sure that the student would feel part of the university community despite the geographical distance from a physical university campus. A concern was to overcome the traditionally high level of dropout rates in

distance education, in which many students do not complete their course of study because of isolation and lack of adequate support (Pierrakeas et al., 2004).

Although the financial compensation of the external member of staff was shared between the individual and the institution (payment of overheads) where he or she was affiliated, it was nonetheless clear to me that special attention had been given towards motivation of the personnel by the use of variable payments. "Variable pay is a compensation that changes as compared to salary, which is paid in equal proportions throughout the year. The employee who is awarded variable compensation has gone above and beyond his or her job description to contribute to the organization success" (Heathfield, 2013).

Tutors and counsellors, for instance, were rewarded with a fixed salary on the one hand, and a variable part, a function of the number of credits and the number of students, on the other hand. The variable part was used to recognize and reward the tutors and counsellors based on the importance of the course (according to the number of credits) and the numbers of students participating in the online course.

Tutors and counsellors played important roles in this teaching and learning model. They were in charge of the teaching and the follow up of the student. The relatively high student numbers made it challenging for teaching collbaorators to carry out their task according to the guiding principles mentioned above. One professor expressed his worries:

> *" The role of tutors and counsellors would become more important if the student numbers would continue growing. The quality of the programmes could become a concern. How could they maintain it in the future?"*

I was wondering if this system of paying for a variable volume of work was really a motivational incentive scheme for teaching collaborators.

5.5.4. Technology in the service of the student

As the Internet was only at its infancy in 1994, the access to virtual education was made possible through "FirstClass" software (developed and sold by Open Text) and e-mail based solutions. During the pilot year 1995, specialists would be sent to students' homes to fix technical problems, giving them a special service (It was still in the early stage of internet use in Catalonia as discussed in the next paragraphs). During my interviews in December 2002, I was told that this service, of course, was not only meant to pamper the first students, it also provided a good learning opportunity for UOCs technical staff.

The following year (1996-1997), the number of students grew to 1.500. At this point, UOC developed its own wholly web-based application known as Virtual Campus 2.0.

Since the new Virtual Campus was accessed through a web browser, the students did not need any application software on their PCs. Home visits were abolished; instead, students could contact an independent call centre or browse a CD Rom with technical explanations. Students benefited from a special deal from Telefónica, the telecoms company, offering lower prices to UOC.

Probably due to the high cost and the low quality of connection, internet access in Catalonia took of in the late 1990s, a later starting point than other advanced countries (Castells et al., 2001, p. 4). However, it increased at a fast pace, similar to other countries. The proportion of persons connected to the internet in Catalonia grew from 4.8 % in 1997 to 24,8 % in 2001 (Castells et al., 2001, p. 4). UOC was well prepared to take full advantage of its potential. As a result, the student numbers had increased to almost 10.000 by the academic year 1998-99.

In the following years, new services were added, and existing ones were extended. The 'Supracampus', regrouping virtual campus environments of different teaching communities was developed. New links to the internet were provided (UUNET, IBERNET) and the UOC turned into an Internet Autonomous System (September 2000). The latter is "the unit (either a single network or a group of networks) of router policy, that is controlled by a common network administrator on behalf of a single administrative entity such as a university or a business" (TechTarget, 2000-2013). (A router is a device or software in a computer, that determines the next network point to which a packet should be forwarded towards its destination).

During my interview in 2003 with the Information Systems (IS) Director, he acknowledged that although the virtual campus was important for the pedagogical concept and the creation of a learning community, "chatting" by students took too many hours a day. This was known through the IDEASolutions platform (a tool, which was designed for e-learning through the internet) used by the virtual campus, which provided, among other services, an integrated application "chat", which allowed dialogue or conversation among many users in real time and "on-line user monitoring", which allowed real-time identification of the users connected to the environment in order to establish conversations (Sangra, 2006). According to the IS Director: *"New e-learning solutions had to be found".* Internet technologies were developing fast but UOC was rather cautious in introducing new tools to the virtual campus. Security

issues were one reason for this reluctance. Familiarity of the users with the existing features was another reason (Senges, 2007, p. 221, 256).

After two years of preparation, a new virtual campus was operating in 2002-2003 with more added value, in terms of simplicity, clarity, user-friendliness and the number of interactive courses. Incidents caused by a technological problem were reduced. Student feedback about the new systems was sought through surveys and open forums for debate on the web. As the IS Director put it:

> *"According to the students, no more services were needed but rather more user friendly interactive systems, similar for all courses".*

UOC concentrated on its pedagogical model; the technology mainly served then to make it all operational. However, as one professor put it: *"I am concerned about the development of the technological platform".* He was not sure if technology was still up to date. According to Senges (2007), investments in ICT had not been sufficient for several years during the Rectorship of Rector Ferraté. Technological needs emerged organically and solutions were introduced if the benefits were proven (Senges, 2007, p. 220). Although technology was an important part of the strategy of UOC, there was no specific ICT vision (Senges, 2007, p. 220). This would become an important issue later on (see next chapter).

5.6.   Role of the Professor: a Management Role.

"We wanted to create a university for the students to learn, NOT for the professors to teach - therefore we need very good professors!", Gabriel Ferraté, November 2002.

In a teacher centred model, the teacher focuses on transmitting the knowledge rather than on the learning of the student (see sections 2.4.5. and 2.4.4.). Professors at UOC do not "teach" but fulfil a coordinator role in which they are expected to work together with others. The different roles of the professors are to be found in Figure 4, Chapter 5. Professors in charge of coordinating a course module, make sure the course offering is the best available on the "market", with different content parts provided by outside "suppliers", who were mostly academics at other universities. During my interview with the assistent general manager, it became clear that this was rather revolutionary for many older academics used to more conventional university environments. The assistant general manager said:

"Not everybody is buying into this new concept. Some academics, who could not live with it, left already. This is why we focus rather on young academics. The climate in traditional Spanish universities is favourable for us. We get lots of candidates".

Figure 4, Chapter 5: The different roles of the professors

Professor-Director of a study field
- Overall management of the study field

Professor-Programme Director (s)
- Design of the programme

Professors coordinating a course subject
- Design of syllabus
- Negotiations with authors (content providers)
- Negotiations with production department (e.g. instructional designers)
- Coordinating with Tutors and Counsellors (academics or professionals)

Teaching collaborators
- Tutors: (subject-based) and Counsellors (student-based): supporting the students

Source: De Jonghe (2013)

Faculties at UOC are different from traditional faculties, which are divisions within a university in charge of teaching and research in a particular discipline. With regard to the official (regulated by the government) degrees, UOC consisted in 2002 of six different study fields: economics and business studies; psychology and educational sciences; law and political science; humanities and language and literature; computer science and multimedia; and, information and communication sciences. Each study field was headed by a 'Director of Studies. In addition, each study field had two or more 'Programme Directors', in charge of a particular programme and of a number of 'professors' coordinating modules. A professor was a specialist in a certain academic field, who was in charge of coordinating the work of the various tutors, and taking part in the design of the syllabus at UOC in cooperation with authors of course content.

The directors, the programme directors and the professors-managers were internal members of UOC's academic staff, while the authors (providing course content), the tutors and the counsellors were mostly outside members (i.e. are not employees of UOC).

The professor-manager coordinating a course had to design the course concept and negotiate with different authors who could provide interesting course material. Course materials might consist of books or manuals, CD-ROMs, videos or web pages. The design of the course concept, the provision of multi media and other materials was very important and was considered by UOC management as crucial in the service relationship with the student-client. For the academic this different role was not always easy. As one professor put it:

> *"You get little help in the beginning with the tasks, concerning the course materials. You use your imagination. Web materials are even more difficult because there is no real support or time."*

Not all academics could cope with such non-traditional tasks despite the fact of existing incentives for some, such as the academic director who was motivated by the attractive salary. One academic director said:

> *"UOC professors perform many tasks. Negotiating with the general manager for financial means for producing the materials and negotiating with the production department, are too much production oriented. However, the salary can be an incentive for the director".*

UOC owns the intellectual property rights of its products and offerings. The original authors of course content retained the intellectual property rights but signed an agreement with UOC, in which they gave permission to UOC to manage these rights for a given period of time (e.g. 10 years). At times, the course manuals were sold afterwards to the university in which the author was employed on a full-time basis or to another third party. The authors were compensated for these transactions. Even though the manuals were being sold to other universities, the specific design (combination of different materials, the learning process going on through the virtual class room) could not be copied. EDIUOC, the publishing company of UOC, acted as the management agent of the intellectual property rights (Sangra, 2006).

The professors-managers were also responsible for finding tutors (mostly professors at other universities) and counsellors. The relationship between the professor-manager and the

teaching collaborators (the tutors) was of some concern to the professor-manager because he wanted to have some quality control of the work of the teaching collaborators. Since the former had access to the virtual classroom, control was possible but not carried out because of fear of intruding. As one professor-manager put it:

> *"I only read messages about the work of the teaching collaborators (tutors and counsellors) if it is really necessary. Sometimes there is not enough time. We have an agreement on the work plan for the students but how do you know if they implement it? Sometimes we get complaints from students (i.e. if answers are not given on time).*

However, as a result of this way of working, a UOC student could receive in theory, an excellent service as he or she was being supported by a team of three sets of specialists (tutors, counsellors and professors), each of them performing specialised tasks as outlined above. As Gabriel Ferraté put it:

> *"UOC is considered a distance university but one with no distance between the students and the professors."*

The student can then in some ways be seen at the centre of what might be termed a 'learning matrix organisation'. Rimbau-Gilabert et al. (2013) discuss the fact that educational managers in virtual universities need models to coordinate the teaching staff offering educational services to a distributed student clientele. Coordiniation is necessary in order to guarantee the principles of uniformity in content, teaching quality, assigments and assessment. Tutors and counsellors and other people involved in teaching have a shared responsibility and respond to different supervisors. This double dependency creates a matrix structure. A matrix structure is being used when organisations have a need to process large amounts of information and when there is a pressure for a dual focus and shared resources (Rimbeau-Gilabert et al., 2013, p. 671). For instance at UOC, the counsellors depend on the Programme Director. He selects them and appraises their performance. He also informs them about the academic aspects of the programme. Counsellors also depend on the Advisorial Function team, which is transversal to the university. This team is responsible for providing training and assistance to counsellors with regards to their responsibilities towards the students. Counsellors have two separate workspaces on the web. In one virtual room, communication takes place with the Programme Director. In another virtual room, counsellors communicate with a member of the Advisorial Function team in charge of a group of programmes. Information flows between counsellors and the Advisorial Function team and the Programme Director make it possible

for the Programme Director to detect problems and plan improvements (Rimbeau-Gilabert et al., 2013). In a matrix structure it is important to have clarity about the role of each unit in the matrix in order to be effective and avoid potential conflicts (Rimbeau-Gilabert et al., 2013).

Given the fact that only professors with an open and flexible attitude would feel at ease in this revolutionary teaching environment, once again, special care was taken with regard to the selection process. As the Assistant General Manager put it:

> *"Who can fulfil this multi-disciplinary role of defining the concept and the content of the course, negotiating with authors and of selecting and managing the tutors and counsellors? Where do you find them? There are many applicants but can they do it?"*

The many candidates for every job opening at UOC suggest that UOC could attract sufficient candidates for its external and internal staff positions. The selection process for internal UOC professors was well organised. The HR staff of UOC first set up a ranking of applicants, purely on the basis of their educational qualification as given in the CVs. The top three were then invited to have an interview with a selection panel, consisting of one internal HR person, one external psychologist and one internal person specialized in the field. However, as very bright people often did not have complete CVs, reducing their chances of selection, it was the task of the UOC professor-manager to detect these bright people and intervene in the selection system.

In the case of the non-official (not regulated by government) programmes, the professor-manager on the selection panel was an external professional (not an academic). In this selection process, more weight was attached to previous work experience than to academic performance.

5.7. Research in UOC

UOC also had a research arm. The foundation (FUOC) consists of the Open University (UOC) and the Internet Interdisciplinary Institute (IN3). IN3, founded in 1998 according to interviewees (but with the year 2000 mentioned as the start date on the website), carries out research. It focuses on the impact of ICT and its implications for knowledge and society. The emphasis on interdisciplinarity was already evident as follows from the following examples:

- One of the research projects is the "Project Internet Catalonia" (PIC) exploring the characteristics and developments of the information society in Catalonia. The project started in 2001. The first study (2001-2003) was about the transition to the network

society in Catalonia based on the results of a survey of 3005 people. It analysed the everyday practices and the social values and attitudes of the Catalan population in the process of transition; their behaviour online and offline (UOC, IN3). Several additional studies were to follow.

- "Art nodes" is academic space, which focuses on the study of the intersection between art, science and technology. It consists of an e-journal, an international database of abstracts of doctoral theses and essays on art, science and technology and a network for debates and news. It shows how the web enables the integration between art and other academic disciplines, which is still a matter for discussion in some universities.

- Since ICT is changing the way learning takes place in every field, the need for more knowledge about learning is felt. According to one of the academic directors I interviewed during this first research period: *"research about learning is crucial for this institution"*.

IN3 offers some possibilities for those wanting to carry out research. In 2002, UOC was already experimenting with systems that would allow professor-managers who wanted to carry out some research to do so. According to the assistant general manager:

"IN3 has been promoting research for all UOC professors for two years. Those interested in research can get financial means to hire assistant managers. It is not sure if those assistants will be able to fulfil their role properly".

According to one professor-manager:

"This is not a good career path, if you like to carry out research. There is a rising problem of a lack of fulfilment for the researcher. However, the beginning of these different classifications (reference to the experiments going on) implies conflict because of the privilege of the researcher. More research will bring new problems and conflicts. There is a lot of confusion around IN3: research is being pushed to be a "real university" not because the researchers ask for it".

It became clear to me that UOC was struggling with its emerging research model. It could not ignore research if it wanted to be "like the other universities". Subsequent to the first research period, research at UOC was to become a pertinent issue.

5.8. Conclusions

I could understand why observers such as Aslaksen (2002, p. 91) merely mention UOC as "a type of institution which resembles in many ways traditional distance education or correspondence institutions in the sense that it practices guided independent learning, through electronic course delivery and the use of electronic communication tools". Senges (2007) also refers to the fact that in the early stages no fundamentally new pedagogy was used. It was rather a restructuring of processes that could then benefit from the new medium of the internet.

This HEI, the Universidad Oberta de Catalunya (UOC), which is a virtual university in Catalonia, also struggled with the tension between teaching and research. From the start it wanted to put an emphasis on the learning of the student, but, since it wanted to be a "real university", it set up a research unit and soon was confronted with the tension between teaching/learning and research. UOC also recognized the importance of a campus by creating a virtual campus on the web. The choice of wanting to carry out research, together with the challenge in the implementation of their learning model based on technology, made this HEI an excellent example of an approach to the strategic management of a university. This example might have lessons for others trying to reorganise their core activities.

After my first research period I found some clear issues:

- Could the special treatment (a special private-public statute) by the government be sustained?

- Was it possible to keep a balance between the three different axes of the organizational model (Figure 2, Chapter 5)?

- How would the UOC group, the companies around the university develop?

- Would this entrepreneurial project evolve into a university "more like the others"? How would this happen?

- Should the pedagogical model strongly based on the reorganisation of processes of teaching and learning through the use of ICT and the unbundling of the tasks of a Professor (Professors-managers, tutors and counsellors), have a more substantial underpinning such as a pedagogical concept (cfr. constructivism, section 2.4.4.)?

- How was research to be integrated into UOC's mission?

- Could UOC keep up with the changes in technology?

6.   The UOC case Stage II 2008 - 2009 (data 2007 - 2008 - 2009)

6.1.   Introduction

The second stage of the research aimed to find out how UOC managed to be successful despites the challenges it was facing at the end of my first research period 2002-2003. Therefore, I made an analysis of the changes that took place since the first research period 2002-2003 with respect to the four topics I discussed in the previous chapter: a public-private construct, the organisational structure, the innovative approach to student learning, and the role of the professor. This approach allowed me to focus my analysis on these topics and avoid getting lost in the daily events which take place in a dynamic organisation, like UOC. I understood that the timing of my second research period was difficult for UOC because it was in the middle of a transition. I believe it was rather difficult for UOC representatives to speak about this transition period with the necessary reflection or objectivity on what had happened. As a consequence, I supplemented my interviews (in January and in May 2009) with other research methods and activities as mentioned in section 4.4.3. (see Table 4, Chapter 4).

On the basis of these various sources, I was able to reconstruct a picture of the changes since my first research period, as reported in chapter four. Hereafter, I will give an overview of UOC during my second research period, before discussing the "why" and the "how" in the remainder of this chapter. I tried to keep the discussion parallel to the discussion in chapter four; some challenging issues related to technology are discussed in a separate section 6.5. Table 10, at the end of this chapter summarizes these changes. Some aspects are discussed more in detail in chapter seven, when discussing the answers to the research questions.

Before I discuss the further developments, I will explain how I was able to construct a picture of what happened since my first research period. In doing this, I come close to Stake's (1995) approach to case study research, which is based on the belief that knowledge is constructed instead of discovered (see section 4.3.3.)

Transition at UOC

The years 2006-2007 were a particular transition period following a change of leadership at the end of 2005. The new UOC management team took over in early 2006. In the ensuing three years the new management team members prepared many new initiatives, related to UOC's organisational, pedagogical and technological model. The new Rector and her management team had to deal with complex organisational issues and integration into the

European Higher Education Area. Some of these issues will be discussed in the next sections of this chapter.

In 2008 and 2009, several new initiatives were launched based on decisions of the new management team. The composition of the new team will be discussed in section 6.2. This was easy to follow by reading the news events reported on the web. However, I was curious about the story behind some of the new initiatives related to:

- The development of the organisational model (a new Rector, a new concept and a new management team)

- The development of the educational model (grounding in a pedagogical approach, better learning resources and practices for online learning)

- The development of the technological model (redesign of the virtual campus, search for better technologies to support online learning)

- The development of the research model (elearn centre, recognition of research groups)

- The evaluation of UOC by the evaluation team of the European University Association and by a technological consultant

I knew from an unpublished interview[32] with the Vice-Rector for postgraduate studies that he linked the educational model to pedagogical approaches, such as constructivism and cooperative and collaborative learning; this was a discourse that I did not hear during my first research period. He also mentioned that UOC were looking into software and hardware for learning environments and were following up on the development of Open Educational Resources. Open educational resources (OER) are teaching and learning materials that are freely available online for everyone (instructors, students, self-learners) to use (OER commons website, website UOC open course ware). For UOC the "open" concept means "open and free access to knowledge", which means unrestricted access, digital, online and free of charge and of most copyright and licensing restrictions. This is different from the first generation of open universities where the concept referred to "universal access" to education, equal opportunities in education including all forms of abilities and diversity.

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[32]   Carried out by Bonte, E. (2007) for the Flemish higher education magazine DELTA of which I was the responsible editor at the time.

Examples of OER include: full courses, course modules, syllabi, lectures, homework assignments, quizzes, lab and class room activities, pedagogical materials, games, simulations, and many more resources contained in digital media collections from around the world (OER commons website, website UOC open course ware). UOC was clearly on its way of finding a better grounding for its pedagogical model and exploring the expansion of its range of new technologies and learning resources.

From the PhD thesis of Senges (2007), a UOC PhD student who compared four higher education institutions with regard to knowledge entrepreneurship, I learned that UOC was going through a difficult period and that they were working on technological issues. Senges (2007) called UOC a "sleeping innovator" because it went through a period of stagnation after its start up in the mid nineties. He claims that in 2002, investments in the technological development of the virtual campus were "largely discontinued" and were a "serious hindrance to internet based innovation" (Senges, 2007, p. 231).

Despite my requests, I could not obtain access to the UOC evaluation report of the European University Association (EUA, 2007), the existence of which was known to me through the citations in the Senges' (2007) PhD thesis. The evaluation report was prepared before the EUA decision to make all such reports public without consent of the university concerned. For instance, the EUA evaluation report (2005) of the Technical University of Catalonia is available on the web. This is an indication of the deliberate decision of UOC to withhold their report from public view. During my interviews for my second research period, one of my interviewees explained that there had been a misunderstanding about the not for profit status of UOC with the evaluation team of the European University Association (EUA). For EUA, the use of the EFQM framework by UOC was an indication that UOC aimed to be a private business, which from the EUA's perspective clashed with the wish of UOC to be accepted as a "proper university", a university like others. At the time of the second visit of the evaluation team, the not for profit status of UOC had been explained to the evaluation team and the final (EUA, 2007) evaluation was positive.

Through a European Project (Fernandes, Montalvo, 2005, p. 77), in which UOC-IN3 researchers participated, I found out that (part of) UOC felt that the EFQM model (explained in section 3.7.) was not so useful for measuring knowledge or for learning process aspects. In order to measure the achievement of educational objectives, UOC developed a specific framework built on the UOC student life cycle (see Figure 5, Chapter 6). It enabled UOC to

design and evaluate processes fitting learners' needs during their lifecycle with UOC. Learners' successes, learners' satisfaction (with regard to, for example, materials, environment, teachers' role and assessment) and drop out level were also monitored.

Figure 5, Chapter 6: UOC student life cycle
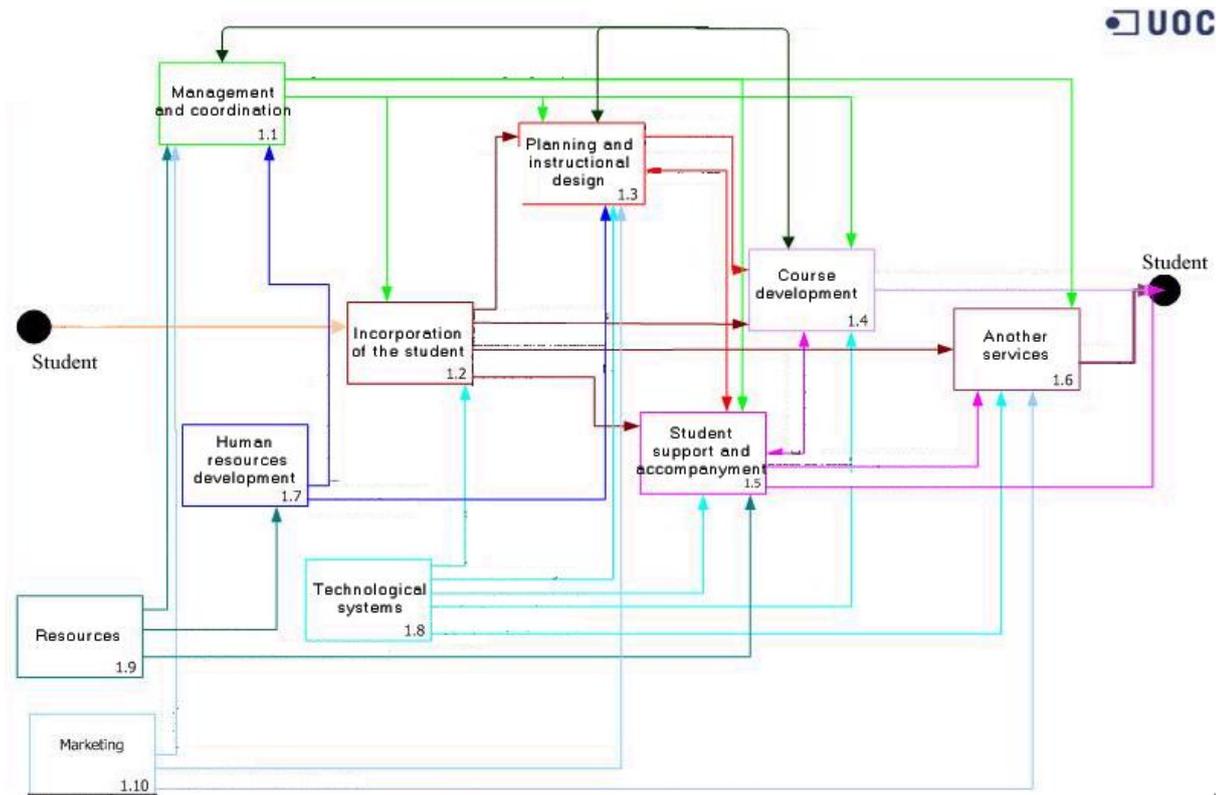
Source: Fernandes and Montalvo (2005)

Figure 5, Chapter 6, shows the main processes at UOC from the students' first contact with UOC until they leave UOC. The arrows between the processes describe the relationship between the processes. Hereafter the main processes are mentioned:

- The potential student has first contact with UOC (bullet on the left side).
- Incorporation of the student (1.2): welcome, explanation about the way of learning and the community aspect of learning at UOC with options:
  - Course development process (1.4.)
  - Process of other services (1.6.)
  - Student support and accompaniment process (1.5.)

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- Management and coordination process (1.1.): with an influence on the instructional design and course development process (1.3.)

- Human resources development process (1.7.): selection and training of staff involved in the course, receiving financial resources from the resources process (1.9.)

- Technological systems (1.8.): tasks related to delivery, assessment and production of technologies (based on Fernandes and Montalvo, 2005)

In view of its aims of being a great university and of being accepted by the other more traditional universities, it is understandable that UOC was adapting to the quality rules for universities put forward by the Catalan, Spanish and European quality agencies. In 2008, UOC was also contributing to the formulation of quality rules for virtual learning in cooperation with the Catalonian Quality Agency (AQU).[33] Officially, the Foundation (FUOC) was (and is) still a member of EFQM[34].

In the academic year 2009-2010, UOC celebrated its fifteenth anniversary. It has found its place in Catalonia and in the network of Catalan universities. Thus the White Paper on the University of Catalonia, noted that UOC "is a key element and contributes its experience in distance teaching"[35].

UOC also was playing an important role in the development of greater Barcelona and the region of Catalonia (website Barcelona Digital City). Respect and acceptance of cultural and linguistic differences are important values as well as contributing to the dissemination of Catalan culture. Through its global campus, the core of its internationalisation, UOC planned to offer multilingual courses (website UOC International; website Languamon-UOC Chair in Multilingualism; Duart, Kiselyova, 2003; Strubell, 2007)

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[33]   Prades, A., Huertas E., (2008), AQU-UOC assessment of a fully virtual education institution, Presentation in Madrid on June 12 th, www.aqucatalunya.org

[34]   www.efqm.org member list (September 27, 2009) EFQM contact at UOC, Juanjo Marti Manzona.

[35]   Associacio Catalana d'Universitats Publiques (ACUP), J.M. Vilalta (coordinator), White paper on the University of Catalonia, Strategies and projects for the Catalan University, ACUP (ed.), Barcelona, June 2008, p 71. http://www.acup.cat/media/versio_final_en.pdf , (September 1, 2009) The White Paper is a contribution from the eight Catalan public universities to the education and research system of Catalonia.

UOC had consolidated its position among more traditional European universities by becoming a member of the European University Association in the spring of 2008[36] (website UOC). It had forged alliances with other universities and research universities in different countries such as with the Ibero-American Postgraduate University association (AUIP) which promotes mobility between students, faculty and PhD researchers from Latin American countries or with the Talloires network, an international organisation of higher education institutions committed to strengthening civic roles and responsibilities (website UOC International Networks).

Through the UNESCO Chair in E-learning, UOC intended to promote equality of opportunities with regard to new technologies in the knowledge society (website UOC UNESCO Chair). It had won several prizes and awards. The Campus project (Santanach, Gener, Almirall, 2008) led to the redesign of the UOC virtual campus. The new virtual campus 5.0., called "MyUOC", has constituted the teaching, work and research environment of the UOC staff since early 2009, and in the summer of 2009 it opened to the whole UOC community. 'MyUOC' represented a learning environment that was open source, modular and inter-operable with other learning environments. This meant that it could be adapted to personal needs because it was set up to be inclusive and transformable. It also helped faculty and students to design their own learning experience. The integration of modules from other learning platforms (e.g. Moodle[37], Sakai[38]) or from other applications (e.g. Gmail[39], Facebook[40]) could take place. It could be assessed from any device connected to the internet

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[36]   Personal information; as the Director of the Flemish University Association, I was an observer during the Rectors' meeting of the European University Association in the Spring of 2008, where the membership of UOC was accepted.

[37]   Moodle: http:// www.moodle.org open source community based tools for learning; a course management system (CMS), free open source software package designed to help educators create effective on line courses.

[38]   Sakai: http:// www.sakaiproject.org a free and open source ware management system

[39]   Gmail: http://www.mail.google.com built on the idea that email can be made more intuitive, efficient and useful, even more fun

[40]   Facebook: http://www.facebook.com social utility, connects with friends and others

and was using open software and meets all the current standards.[41] In May 2009, "MyUOC" got the Learning Impact award for the best educational portal from IMS Global Consortium, a non-profit organisations focusing on improving learning through technology.

In June 2009 UOC was named a "Centre of Excellence" for its leadership in open educational technology by the New Media Consortium, an international consortium of universities and museums dedicated to the exploration and the use of new media and technology (UOC website). UOC was the first European Education Institution to receive this award.

With 42,397[42] undergraduate students enrolled in the academic year 2008-2009 (54,378 students if all programmes are being considered), 200 faculty members, 2,346 temporary teaching staff, mainly tutors and counsellors[43], 544 administrative staff, and more than 6,000 graduates, UOC aimed to be "the University of the future", an institution that also fostered research, following the advice of an International Scientific Commission, and improving the academic quality of its degrees[44]. Compared to the public universities in Catalonia, where the number of students decreased by about 10 %, UOC experienced the greatest expansion in the period 2002-2010 (OECD, 2010, pp. 73, 81). The student profile 2008-2009 is shown in Table 8, Chapter 6.

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[41]   http://pretoria.uoc.es/wpmu/Edtech/2009/O9/02/my-uoc-the-new-homepage-now-availa (September 21, 2009)

[42]   Compare with 38,842 undergraduate students for the academic year 2006-2007 mentioned in UOC annual report 2006-2007 and the brochure about the academic year 2007-2008: The benchmark online university. The summary of the UOC annual report 2007-2008 mentions 40,264 undergraduate students.

[43]   Compare with 1,952 teaching collaborators and 153 in-house faculty members for the academic year 2006-07 mentioned in UOC annual report 2006-2007 and 2,110 teaching staff members mentioned in the brochure 2007-2008: The benchmark online university. The summary of the UOC annual report 2007-2008 mentions 187 faculty members and 2,043 teaching collaborators.

[44]   Based on the numbers mentioned in the annual report on the academic year 2008-2009 (English version, pp.112-131)

Table 8, Chapter 6: Student profile in 2008-2009[45]

Gender	Women	Men
	48%	52%

Age	<25 y	25-30 y	31-40 y	>40 y
	9%	33%	40%	18%

Professional situation	<30 hrs a week	>30 hrs a week
	7%	93%

Place of residence	Inside Barcelona	Outside Barcelona
	60%	40%

Since 60 % of UOC students were living in Barcelona, it is not the distance which keeps them away from "on campus" learning, but, as mostly working people (93 % work more than 30 hours a week), they prefer the flexibility offered by UOC.

According to the above mentioned data, the percentage of male students is 4 % higher than the percentage of female students. This could be because of technological barriers or because life-long learning for (working) women is more difficult. The summary of the UOC annual report 2007-2008 mentions, however, a higher number of women enrolled in undergraduate courses. The number also seems to vary according to the type of courses. Castells and Diaz de Isla (2001, p. 7) found that in the year 2001, as a percentage of the Catalonia population, 38, 3 % (48, 7 % in Barcelona) of males were internet users but only 21, 8 % (31, 4 % in

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[45]   www.UOC.edu/portal/english/la_universitat/coneix_la_uoc_estudia/estudiant...January 23, 2009; www.slideshare.net/cristobalzamora/open-university-of-catalonia-the-online-university-presentation: The university of the knowledge society, slide 27, August 25, 2010 (presentation based on 12 years of UOC).

Barcelona) of women were internet users. They also reported that the annual growth rate of internet users was significantly higher for women than for men. In 2010, UOC organised a round table which tried to find out if ICTs were becoming a new barrier to access to education for women around the world. According to the chair, Gill Kirkup, gender inequalities with regard to new technologies cannot be ignored (Ruffini, 2010).

In 2008-2009 the fields or disciplines UOC offered were: Economics and Business Studies, Information and Communication Sciences, Law and Political Science, Arts and Humanities, Psychology and Education Sciences, IT and telecommunication (Annual report 2008-2009). These fields cover several study programmes.

Courses were offered in Catalan, Spanish and, from academic year 2009-2010, with the launch of the global campus, also in English to a limited extent. New study programmes such as Islamic and Arabic studies (offered in French), food systems, culture and society were launched in 2009-2010.

From my interviews in January 2009 with the Vice Rector for postgraduate studies, I learned that teaching and learning in fields that would require laboratory work would be possible with more funding to organise the laboratory work. Although this suggests that courses in the above mentioned disciplines are cheaper, Azad et al. (2012) observe that internet accessible remote laboratories, an arrangement that allows laboratory equipment (for science, engineering and technical education) to be controlled remotely, could provide adequate training for students in HEIs with limited resources. Two main groups of online laboratories exist: software simulations and laboratories made up of real hardware equipment (Auer, 2009; Global online laboratory consortium, 2013).

6.2. The evolution of the public - private construct

6.2.1. New leadership

In 2005, three possible candidates were put forward for the new UOC leadership. The nomination was surrounded by difficulties extensively reported in the press for several

months[46]. From the Catalan governmental side, strong support existed for UOC Professor Imma Tubella to become the new Rector. She was the former (1999-2003) Vice-President of the Internet Interdisciplinary Research Institute (IN3) and former Member of the Board of the Catalan Radio and Television. Although she did have a PhD in Social Sciences, her lack of scientific credentials was criticized by several sources. She nevertheless got strong support from Professor M. Castells, the Director of the UOC IN3 Institute who emphasized her academic trajectory and her ideal profile. Imma Tubella was finally appointed by the Catalan Government at the end of 2005.

During our interview in May 2009 she stated:

> *"I knew UOC from the inside and convinced the Catalan government that*
> *UOC needed to increase the amount of internal professors with a PhD in order*
> *to be considered as a real university. I told the government that I would not*
> *take the job if I could not nominate more full professors with a PhD at UOC. I*
> *wanted to take on the project of the former Rector and **wanted to make a real***
> ***university of it"***.

After the interview, I wondered if she would avoid the traps of many traditional universities, confronted with mission overload while trying to fulfil too many tasks (sections 1.2 and 2.1.)

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[46]   El Pais (2005). La Generalitat sustituira a Ferraté por Imma Tubella en la UOC, September 16. http://elpais.com/articulo/cataluna/Generalitat/sustituira/Ferrate/Imma/Tubella/UOC, (September 1, 2009) (The Government of Catalonia will replace Feraté by Imma Tubella at UOC).

     Delclos, T. (2005). Entrevista: Gabriel Ferraté, Rector de la UOC "No avalo ni dejo de avalar el nombre de Imma Tubella", El Pais, September 17. http://elpais.com/articulo/cataluna/avalo/dejo/avalar/nombre/Imma/Tubella/elpepi, (September 1, 2009) (Interview with Ferraté. I will not stop to support the name of Imma Tubella).

     Costa-Pau, M. (2005). Sola logra el consenso del patronato de la UOC para nombrar rectora a Imma Tubella, El Pais, October 12. http://www.elpais.com/articulo/cataluna/Sola/logra/consenso/patronato/UOC/nombrar/re (September 1, 2009) (Only the consensus of the board of UOC is needed to nominate Imma Tubella).

     S.T. (2005). El Pais, La rectora de la UOC quiere limitar los mandatos y aumentar la investigacion. El Pais, December 17. http://www.elpais.com/articulo/cataluna/rectora/UOC/quiere/limitar/mandatos/aumentar (September 1, 2009) (The Rector of UOC wants to limit the mandates and increase research).

and many complexities. In the introduction[47] to the inaugural lecture of the UOC 2006-2007 academic year, the new Rector stated that UOC would offer high quality teaching in close cooperation with the student, while taking into account the social and cultural needs of the country and helping to redefine and reconstruct the Catalan identity. The values within which this would take place were: dialogue, tolerance, openness to the world and reflection on diversity in its widest sense.

According to the opening address[48] of Rector Tubella at the start of the academic year 2007 - 2008, assuring quality virtual university training by improving the academic quality of its degrees and adaptation to the requirements of the European Higher Education Area were specific challenges. Therefore, the approval of the first EHEA-adapted degree proposals and the consolidation of the International Graduate Institute (IGI) were important aims.

Another challenge was to ensure the sustainability of UOC. To this end, the completion of the institutional assessment process - following their decision to adhere to the Institutional Evaluation Programme of the EUA - and the negotiation of the Programme Contract with the government - which set the contours for government support, were seen as important objectives.

In addition, Rector Tubella wanted to establish the university as a benchmark university in a leading technological position. Therefore, the virtual campus needed to be updated. The start up of innovation catalysing projects was encouraged, as well as the drafting of the virtual library's strategic plan 2008-2012[49].

In short, the plan of the Rector was to improve the positioning of UOC within the Spanish university system and to play an international role.

The following year, in the introduction[50] to the inaugural lecture of the academic year 2008-2009, the Rector made a reference to a renewed corporate culture, consisting of the following elements: cooperation, communication, transversality, flexibility, mobility and quality. The

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[47]   Tubella,I., (2006), "The primary condition for peace", UOC papers, nr 3, http://www.uocpapers.uoc.edu

[48]   Tubella, I. (2007) "The state of the university", UOC papers, nr 5. http://www.uocpapers.uoc.edu

[49]   http://bibliotheca.uoc.edu/eng/index (July 22, 2009)

[50]   Tubella,I., (2008) "From the UOC on the internet to the Network-UOC", UOC papers, nr 7 http://uocpapers.uoc.edu

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term "corporate culture" used here refers to terminology more used in business. This claim refered to the original aim (a more business-like approach) at the start of UOC. I wondered how this would fit with the aim of becoming a "real university".

Another part of the plan of Rector Tubella was for the UOC to be a benchmark university in a leading technological and academic position within the Spanish system and internationally.

In the introduction to the inaugural lecture 2008-2009, Tubella refered to the decisive stage UOC was entering: by reaching fifteen years of activity, UOC had to consolidate its position in the Catalan, Ibero-American and European university system. Technological innovation through the creation of new campus tools and classrooms (virtual campus 5.0.) and teaching innovation by, among other things, a qualitative multilingual offer (courses in Catalan, Spanish and English)[51] were important goals. The development of the research mission and the discovery of new knowledge areas were also a concern. Emphasis would be put on increased cooperation with local and international bodies and on mobility of knowledge, students and faculty.

The social aims included: commitment to social well-being, which means aiming for quality of life within and beyond the university, and humanitarian outreach through promotion of cooperation projects, such as the EcoUniversity, a pioneering project which will focus on researching and developing practices for social and environmental sustainability, and the Virtual Cooperation School, a range of online training programmes originally set up with the Red Cross (the campus for peace, annual report 2008-2009).

During my interview with Rector Tubella in May 2009, I learned that she was convinced of the need for learning through ICT. To reach out to other continents, such as Africa, the Rector claimed that ICT is the path to follow since there is no money available for buildings. I was also informed about her own research on youth and media, which she was supporting with the data available at UOC. Part of her plan was to convince colleagues from traditional universities to adopt the policies of UOC.

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[51]   UOC is a bilingual university. It offers courses in Catalan and Spanish. Some courses are also available in English. In 2007, UOC embarked upon a six-year multilingual policy strategy. The first phase aims at making staff competent in Catalan, Spanish and English. In the second phase, other languages will be taken on (Strubell, 2007)

In order to realize all the above discussed ambitions, it was important for the new Rector to be able to take advantage of the flexibility given to UOC by the public–private construction, the partnership with the Catalan Government. Indeed, the first Rector had wanted previously to combine effective decision making with governmental support. For this purpose, a new legal public-private framework was set up, allowing flexible governance.

6.2.2. From the public - private construct to a public foundation.

As pointed out in section 5.3. , the Catalan Autonomous Government early on (1994) became a majority member (51 %) immediately after the establishment of the Foundation for the Universitat Oberta de Catalunya (FUOC) with four private partners. This enabled the public financing of the Catalan degrees. However, according to the vice rector for post-graduate studies (Interview, January 2009):

> *"Only 30 % of our funding is now coming from the government (mainly for the Catalan bachelors' degrees) and 70 % is based on our own resources from student fees and post graduate fees. But we do not need more money, but more flexibility to have the freedom to take the necessary actions".*

By 2009, FUOC had six private partners: the Catalan Federation of Savings Banks, the Barcelona Chamber of Commerce, the Reus Chamber of Commerce, the Catalan Radio and Television Corporation, the Fundacio Enciclopèdia Catalana and the Fundacio Telefonica.

Early in 2008, the Spanish law on foundations changed. From being a private foundation, 51% government owned, FUOC became a public foundation. As a public foundation, FUOC would be closer to the idea of "public good", which is the idea behind the other universities, members of the Catalan University System. As a result, the statutes of the Foundation for the Universitat Oberta de Catalunya (FUOC), established in 1994, were adapted in 2009 to the new legal frame work for foundations (February 9, 2011, deposit of new statutes with the Foundation Register).

As it was now going to be a public university, UOC wanted to emphasize its social approach. New initiatives illustrated this emphasis. UOC made an agreement with the government for training the unemployed for free[52]. It set up an MBA for sustainability, a "social" MBA[53].

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[52]   "The UOC to train up to 30, 000 unemployed people via monthly e-learning courses", http://www.uoc.edu/portal/english/la_universitat/sala_de_premsa/noticies/2009/noticia (November 3, 2010)

Another example was a study programme in Tourism (Economics and Business Department). Tourism is an important economic sector in Catalonia with many small enterprises (95% of Catalan companies (Garay et al., 2011). In rural tourism, small family firms are providing accommodation to tourists. Garay (from UOC's IN3 Institute) et al. (2011) emphasize the importance of ICT in the further development of rural tourism. 70 % of the customers of small firms, lodging rural tourists find out about the possibilities for accommodation in rural areas through the Internet.

During my interviews in January 2009 with the Vice Rector for postgraduate studies and with the Rector in May 2009, I learned that UOC was expecting that the regulation concerning personnel management at universities was going to change in the near future. The Rector and the Vice-Rector for postgraduate studies expressed their hope that new regulation would not turn out to be too restrictive in terms of rules about personnel. The flexibility guaranteed by the public-private construction was still important because UOC wanted to be able to pay the necessary flexible salaries to people they needed. UOC also needed to be able to react quickly to the challenging needs of the Catalan society such as setting up new study programmes in times of economical crisis, and demands from the labour market for new skills.

Due to its specific characteristics, being the only Open University in Catalonia, UOC benefits from a flexible system, which is sometimes envied by other Catalan universities. For instance, it has been able to switch line items in the budget which is not allowed for the other Catalan public universities. The funding of public universities is based on programme-contracts (mostly 3 year-contracts) with the Catalan Government. Such contracts include agreements on teaching, research and technology transfer, university-society relations and internal management. The established objectives are evaluated on a yearly basis on the basis of quantitative and qualitative indicators, which have been defined in relation to the lines of action presented in the strategic plan of the university. It remains to be seen - and I believe this touches the core of UOC and of the present research - whether UOC can claim to be like the other public universities and at the same time ask for flexibility, with different rules applied to them. In that respect, the White Paper on the University of Catalonia (2008, p. 71),

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[53]   Social MBA programma (MBA en Social Entrepreneurship in Spanish): http://www.uoc.edu/masters/eng/master/web/global_executive_education/programas_mba_directivos/master/MBA-Social/programa_academico.html (August 12, 2011)

mentioned that it ought to be considered whether the other Catalonian universities have to participate with UOC and have a voice or a vote in its decision-making bodies.

During interviews in January and May 2009, the Vice-Rector for postgraduate studies told me that, in case their flexible organisational model suffered as a result of new regulation, they would envisage taking on board more private partners in order to reach a majority of private partners so that government and other public partners would be in the minority in case of voting. I was informed that the Rector would go to the parliament and ask for the flexibility which is needed if UOC is to carry out its mission in Catalan society. The Rector's aim was to emphasize the need for a flexible organisational model that would allow for easy adaptation to a challenging environment, using available resources more effectively, while sustaining and strengthening itself (Wheatley, 2006).

In June 2009, the Rector gave a presentation to the Catalan Parliament in which she pleaded for the preservation of the UOC model, which is carrying out a public service while being privately managed by a foundation (UOC website). She stressed that UOC was the first virtual university in Europe, with an innovative technological model and with a student-centred pedagogical model, which could inspire other universities. She also warned the parliament that the world of education was changing in a radical way. She mentioned that UOC had been welcoming the first of the "digital natives" (young people between 7 and 20 years old)[54].

There are also some internal risks linked to having become a public foundation. During my interviews in January/May 2009, I learned that the administrative staff wanted to obtain the status of civil servants now that UOC was going to become a public foundation. The Rector mentioned during the May 2009 interview that she would like "to prevent this from happening" because the status of civil servant in Spain was a protected status based on strict rules. This would make it difficult to demand flexibility (more availability) from the administrative staff (Parrado Diez, 2001; OECD, 2010, p. 196).

The Vice-Rector for postgraduate studies explained to me that it was becoming more difficult to work with the government because of developments within the Catalan political parties

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[54]   Imma Tubella pide al Parlemento de Catalunya que preserve la especificidad de la UOC, Noticias, 11/06/2009 http://www.uoc.edu/portal/castellano/la_universitat/sala_de_premsa/noticies/2009/notici (September 1, 2009) (Imma Tubella aks the Catalan Parliament to preserve the specificity of UOC).

with which they have to contend. For some issues, such as the organisation of the master programme for school teachers, they have to deal with different ministries where different parties are in power.

By 2009, the influence of the regional and national laws, and of European organisations and their network, had become important. During my 2009 interviews and upon further reflection, I had the impression that, at least officially, the more business-like approach of the past, of looking at the organisation as an innovative enterprise, had disappeared. UOC now stressed their open innovative technological and pedagogical model which could be a reference for other universities, but no longer the "enterprising" aspect. One interviewee confirmed that, indeed, the pressure of the quality agencies, and the wish to act in conformity with its requirements in order to be considered as a "real university", had become a primary concern. In view of these developments, it is understandable that UOC and its faculty members went through the procedures to be accredited by the Spanish and the Catalonian quality agencies, acting according to the rules and procedures of the European Network for Quality Agencies (ENQA). I follow up on this in chapter seven (section 7.4. feature six).

6.3.   The organisational structure – change to a transversal model

In 2009 (as is still the case) the Board of Trustees of the Foundation (FUOC) was still the highest body governing the Foundation. It consisted of a standing committee (executive body) and the FUOC council (consultative body).

The Board of Trustees of the UOC appointed an ombudsman, who defends the rights of all members of the UOC university community from discriminating, undermining or arbitrary actions.

The Governing Council with the Rector, the Vice-Rectors and the General Manager (or manager) remains the highest collegiate body of government of UOC. Specific commissions exist for the two main areas of the university operation: teaching and administration. The scientific committee is the highest body with respect to research, followed by the Director of the IN3 Institute and the Vice-Rector for research.

The equilibrium between the academic dimension, the resource dimension and the programmes and projects dimension in the original model went out of balance because the administration became too powerful according to the academic staff (Senges, 2007, pp. 215-

216), who claimed that the management was taking insufficient care of the needs of the academic dimension. In section 7.4 (feature five), I will analyse this aspect further.

Change to a transversal model

As mentioned in the previous chapter (section 5.4.), the original UOC structure (Figure 2, Chapter 5) was dependent on the administration. In 2006, the new Rector decentralised the organisational structure by creating executive Vice-Rector-teams. Each Vice-Rector now had a vice-administrator and a management team for support.

The study fields had the support from a faculty administrator and more technical experts were added to the programme management. Staff departments were also reorganised, as well as the departments supporting the Rector.[55]

Since 2006, the organisation structure of UOC looks as follows (see Figure 6, Chapter 6) (in Spanish, explained in English further on):

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[55]   Academic year 2005-2006, Governing Body and institutional activity.

Figure 6, Chapter 6: UOC organisation chart 2008-2010
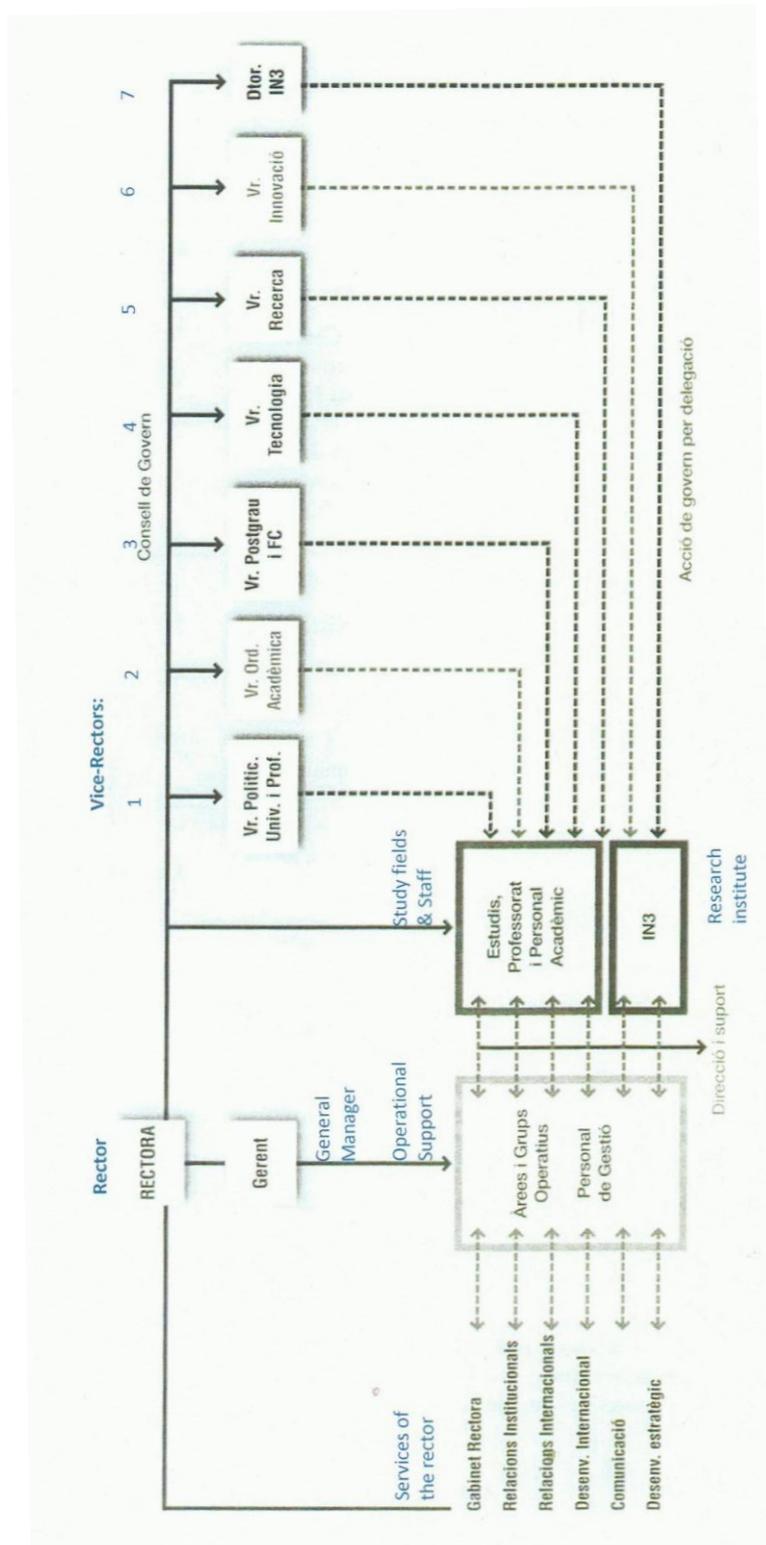
Source: UOC "Pla de communicació de la UOC" 2008-2010 (Communication plan)

The new UOC structure modifies the balance between the academic dimension and the managerial dimension of Figure 2, Chapter 5. The number of Vice-Rectors (or equivalent) has been increased from five to seven (see also numbers on Figure 6, Chapter 6):

1. University Policy and Faculty;

2. Academic Organisation (from student recruitment to alumni processes);

3. Postgraduate Studies and Continuing Education (international graduate institute IGI, master and lifelong learning);

4. Technology.

5. Research;

6. Innovation;

7. Director Research Institute IN3;

Vice-Rectors 1, 2, 3 and 4 can transversally interact with the directors and the staff of the different study fields.

Vice-Rectors 4 and 6 feed into the whole system. Vice-Rector 5 and Director 7 are mainly involved with research. Each Vice-Rector now also has a staff of his or her own. Previously, Vice-Rectors could take policy decisions, but they could not implement them because of a lack of direct staff. They had to convince the General Manager (GM) of the necessity of their proposed policies. Nevertheless, it seems that functions 1, 5 and 7 will have to co-ordinate their policies.

In 2006, the new General Manager was a young PhD with a background in hospitality management (tourism). The new Director for International Development also had a background in the hospitality sector (museums). This was an interesting development. Now that services in higher education have become an important tool for competition, it could be useful to benefit from the expertise from a different service sector. It was also a clear message to the administration that customer service would be expected from UOC staff.

It was not clear from this structure how the participation in the organisational decision making of faculty members would take place. During my 2009 interview with the Vice-Rector of postgraduate studies, I learned that the strategic plan was now being prepared inside the

institution, although I did not get a clear view about who was involved in the process. He stated this as follows:

> *"We get 6 or 7 trials (of the strategic plan) now! Before, the strategy used to be drafted by an outside consultant, who sometimes did have the wrong hypothesis, such as for instance about expected students numbers (because of the differences between the situation in Spain as compared to Catalonia)".*

Students are also involved in different ways. They participate through democratic elections by telematics; they participate in commissions through the virtual campus; and they participate in systematic opinion polls and in the assessment of the services which are provided to them.

Restructuring of the University Network

The new Rector stated in 2008 that UOC, born on the internet, should become a university network open to:

- people and closely linked to society by focusing on the needs in terms of access to education,

- cultures, with roots in Catalonia and a world wide presence through the internet

- dissemination of ideas, based on high quality teaching and learning and research focused on the use and the impact of ICT on the economy, on culture and on society in general.[56]

The network concept covers several meanings (Bouteligier, 2009, [57] Castells, 1996, 2000). During my first research period the term "network" at UOC was used with regard to the

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[56]   Tubella I., (2008), "From the UOC on the internet to the Network-UOC", presentation at the start of the academic year 2008-2009, UOCpapers, iss.7 http://uocpapers.uoc.edu ; Torres A., (2009), "Network university on the net", report. http://www.uoc.edu/portal/english/la_universitat/sala_de_premsa/reportatges/2009/xa... (October 21, 2009)

[57]   "It refers to changing state-society relations and alternative governance mechanisms and their mechanisms on policy making. It is also used as a spatial metaphor and refers in this context to conceptualizations in political geography and sociology of contemporary practices that extend beyond the state. Places, actors and activities are increasingly connected to each other in large networks." From Bouteligier, S. (2009), "Does networked globalization need networked governance?" Paper presented at the 50th annual convention of the International Studies Association, New York City, USA.

companies that were linked to UOC. What happened to this network of companies? The businesses in the network showed some mediocre results, mainly due to management problems, but after some restructuring in 2006 they again became profitable. Today, there are three of them left. Since becoming Rector, Dr. Tubella was concerned about the "wide-ranging business galaxy" surrounding UOC. Tubella wanted companies that contributed value, that established links with the university and that offered knowledge transfer (Biosca, 2007). During an interview in May 2009, Tubella stated:

"I am not in favour of the private business of knowledge".

UOC only kept the companies that are close to the core of UOC. Two of them are the 100% UOC owned publishing company, Editorial UOC, and a company which produces learning materials for UOC and other universities, Eureca Media. A third company, EducaciOnline, enables over 25 year old people to prepare for an entrance examination. In the first half of 2009, the company GEC, 50% owned by UOC and 50 % by a private bank, La Caixa, which is also one of the partners in FUOC, was sold to two investment funds (UOC Press room, 2009). GEC, which is no longer owned by UOC, " is a business leader in the field of innovative e-learning, development solutions, virtual communities and collaboration work" (Annual report 2005-2006). It offers training services to companies in sectors such as banks, pharmaceutical, automobiles and insurance.

UOC has kept its links with networks closely related to their main activities teaching and learning, research and international cooperation. Two examples are the virtual network of UOC students and "the Campus for Peace and Solidarity" (mentioned in section 5.5.2.) working with developing countries and their students and population.

New networks have been emerging: research networks, alliances with research institutes and universities abroad (in different disciplines or inter- and intra-disciplinary), the global campus (for students and institutions worldwide), launched in 2009-2010 in order to progressively offer multilingual programmes. UOC has partnership agreements with outside companies receiving training and knowledge sharing (Associate Institutions and Companies: see UOC website, university and business, 2013).

UOC has become a member of several networks in the higher education sector. UOC is also connected to universities and companies competent in learning technologies, such as EDUCAUSE, New Media Consortium (NMC) and IMS Global Learning Consortium (GLC), and to consortia such as the MIT open courseware.

The International Graduate Institute (which oversees the Masters programmes as well as the continuing education courses) plays an important role in UOC's internationalisation strategy which consists of building alliances worldwide with universities or research institutes. The previous international strategy of selling the campus or to have more students, has been abandoned.

Networks are also developing in more traditional places. In the traditional university organisations, which are reverting more to the managerial model (in the sense of being managed in a top down manner), the potential conflict between the self organising capacity of networks, and the centralised management at the top of the institution, becomes more explicit. The difference with UOC is that its capacity for effective decision making and the ensuing implementation of the decision, allows for quick adaptation to new situations. One example is the flexibility given to teachers to quickly update and adapt the content of programmes. In organisations that are organising themselves, people, ideas and information circulate freely and they are able to create structures that fit the present situation, such as temporary teams to deal with specific needs (Wheatley, 2006).

6.4.   The innovative approach to student learning and research

From the beginning, UOC had made a clear choice in its pedagogical model: a virtual and asynchronous teaching model, allowing students to learn in an effective way without being impeded by barriers of space or time, and providing them with good materials and effective support.

UOC sought to operationalize this model by unbundling the tasks of the professors and building an external network of teaching collaborators. This way of organising had implications for human resources strategies. It also led to (re)constructing the advantages of a classroom on the web; it was compelled to reflect on how to build a cultural learning environment on the web.

In the first stage, UOC focused on the organisation for the processes of teaching and learning.

During my second research period, the emphasis seems to have shifted to the concepts that were important for delivering quality e-learning. Before I discuss the concrete changes in the innovative approach to teaching and learning, I need to elaborate on concepts of innovation, centres for e-learning and learning technologies and the reasoning behind the renewed

pedagogical model, all of which are important in understanding the recent developments at UOC.

6.4.1. A focus on innovation

Concepts of Innovation

At a conference in Poitiers, the Vice Rector for Innovation, B. Gros (2008),[58] stated that innovation had become a crucial concept at UOC, since it is crucial for the development of its e-learning. She saw a close relationship between research and innovation. Research leads to the creation of new processes, products and knowledge. Innovation is an obligation during the lifecycle of an organisation. Innovation is, however, different from improvement since it can contain risks, errors and uncertain knowledge.

Gros distinguished several types of innovation. First, she mentioned research leading to developments which culminate in innovation. Second, 'open innovation', which she saw as a good model for improving collaboration between universities and companies. Open innovation means sharing of knowledge in order to be able to explore all the possibilities, which would not be possible on their own. The open innovation concept, which originated in business, not only relies on internal sources of ideas, but also uses external sources (Chesbrough, 2003). Open innovation encourages organisations to find the most appropriate organisational model to make new contributions from within or from outside work. As a third type of innovation Gros mentioned 'guided innovation' (Hannan and Silver, 2000, 2005) as a necessity. This concept refers to the growing institutionalisation of efforts in innovation in university-level teaching as opposed to former methodological changes adopted individually by some lecturers. Hannan and Silver (2000, 2005, p. 161) distinguish seven types of guided innovation such as:

- Individual and group innovations: relating to the teaching rooms and the course as direct response to the needs of the students and to professional matters (student led seminars, laboratory simulations);

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[58] Begona Gros, used to be full-time professor at the Faculty of Pedagogy of the University of Barcelona, where she was the Director of Research at the Institute for Educational Science. Fields of interest: instructional design, computer supported collaborative learning and e-learning. http://www.iadis.org/celda2006/keynotes.asp (August 21, 2009)

- Subject-specific initiatives (including initiatives backed by professional associations and groups);

- Innovations in technology-based education: making use of new technologies and developing or acquiring associated materials;

- Innovation prompted by the curriculum: needs of modular or semester based structure, changes in the content of the fields of study, interdisciplinary developments;

- Institutional initiatives including decisions on different procedures and professional development processes;

- Systemic initiatives such as the creation of a governing body or the set up of distinct committees;

- Systemic spin offs which arise in the HE institution as a result of procedures and practice.

In a paper written for the first innovation forum in November 2007, Gros (2007) agrees with Hannan and Silver (2000, 2005, p. 23), who state that innovation can have different implications for the teacher and for the student which are not necessarily related. Therefore it is necessary to assess if changes really took place in the teaching/learning programmes, when the teacher is experimenting with new approaches in his/her teaching,

Gros also refers to the criteria of "penetration" and "effectiveness", as put forward by Cuban (1999, 2001) when searching for evidence on change processes in teaching and learning practices. It is also necessary to assess the degree in improvement of learning quality. Therefore, Gros (2007) uses a specific research methodology, 'educational design-based research' which is an interactive method, framed and directed towards intervention, though still underpinned by theory.

Centre for e-learning and Office for learning technologies

In early 2009, UOC set up a Centre for e-Learning and Innovation[59] where research groups and more than 30 lecturers carry out research. The Institute has four divisions:

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[59] www.uoc.edu/portal/english/la_universitat/sala_de_premsa/noticies/2009/noticia 27/02/2009 "The UOC sets up Spain's first e-learning research and innovation centre with researchers from all over the World" (July, 23, 2009)

1. Training (a Masters in Educational Technology, and a specific Masters for UOC professors on this topic);

2. Research (a PhD in Education and Information Technology);

3. Innovation through internal projects such as the development of a special tool to talk to students, and through external projects, such as implementing new technological ways with companies, and

4. Dissemination (the UNESCO e-learning Chair, and articles).

Besides requirements in adapting to the European Higher Education Area, the launching of the Centre was also inspired by the report of the European Science Foundation, which stated that more research was necessary on teaching systems in higher education. The research programme (2009-2012) consisted of the analysis of teaching and learning processes, the organisation and the management of e-learning, and the technological resources for learning. It focused on current concerns, shortfalls and potential improvements of e-learning. The Centre continues to analyse the use of teaching and learning technologies with particular emphasis on higher education and lifelong learning.

Another UOC department, the Office of Learning Technologies[60], with a team of about 50 members, plays an important role in making learning an 'exciting' experience. An aim is to create learning that becomes a dynamic process, which asks for the commitment of the learner and the involvement of his or her coaches. In this dynamic context, the focus on learning outcomes becomes important. The Vice-Rector for postgraduate studies, stated in our interview in January 2009 that:

> *"The discussion about different ways of teaching and learning such as on line, face to face, blended or problem based, have to be seen in the context of how to reach these learning outcomes".*

Renewal in the pedagogical model

During her presentation at the EADTU conference in Poitiers, Gros (2008) [61] stated that UOCs innovations in learning would take the focus away from online content provision

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[60]   http://learningtechnologies.uoc.edu/resources/ (July 23, 2009)

[61]   Gros, B. (2008). Research based innovative networking in teaching and learning in Catalonia.

(providing the student with good didactical materials), moving towards flexible e-learning models which look at user needs, and towards the third generation of socio-cultural models, which focus on activities such as online communities.

Gros presented the earlier UOC model (1995-2007) as a traditional model with a 'medieval city' centre. I was initially surprised by this reference to a medieval city centre, which evokes images of traditional brick and mortar universities. What she meant is that, in the first stage of the UOC model, rather static pedagogical materials were provided online to the students. The new model embraced by UOC since 2007 is a social-constructivist model with a 'modern city' structure (without a centre), where students participate in knowledge construction.

Gros presented the actual pedagogical model (see Figure 7, Chapter 6) as follows:

Figure 7, Chapter 6: Actual pedagogical model
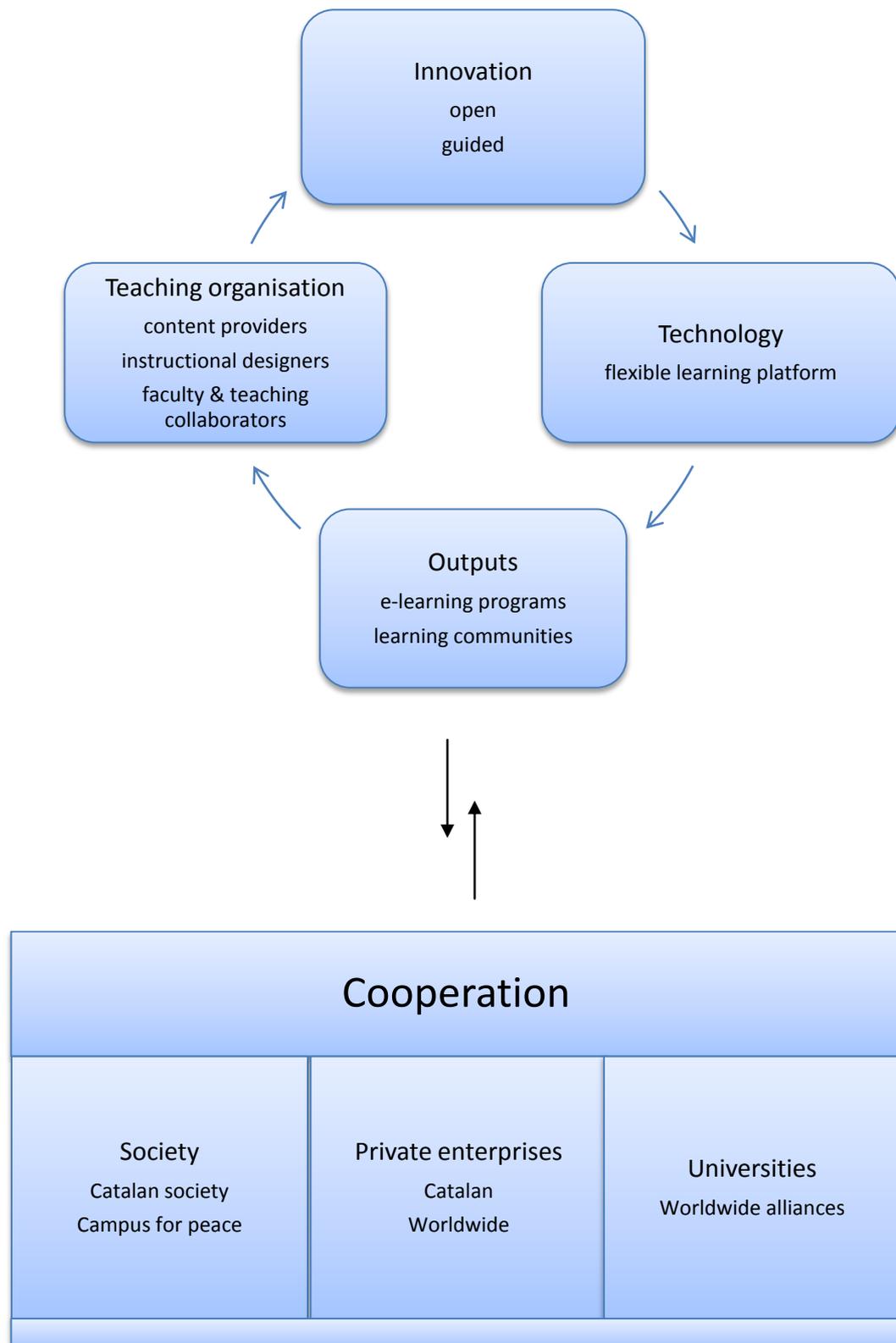
Source: adapted from B.Gros, UOC (2008)

She sees the dynamics in this model working top-down as well as bottom-up. According to Gros the following developments are now important. The content will consist of new formats brought through new channels. More mobility to access content from anywhere and at any time, will be possible since content will be accessed not only through computers, but also from other instruments, such as mobile phones. Social learning in a social virtual learning environment will increase through web 2.0 possibilities. Evaluation (student assessment) will be made possible through the e-portfolio (Barbera et al., 2007). Immersive learning can take place through games and simulation. Gros realises that extensive discussion is needed on all this because understanding and exploiting all these possibilities takes time.

Hereafter, I need to explore how this new emphasis on open innovation (Chesbrough, 2003) and on guided innovation (Hannan and Silver, 2000, 2005), which were leading to the renewal of the UOC pedagogical concept, affected the original features of its approach to student learning, which had been regarded as innovative in 2002.

By its client centred approach in terms of flexibility for the student with respect to time, space and the modularisation of courses in the context of an individual learning path, UOC was already innovative. By the reorganising of the tasks of the professors and providing students with appropriate guidance and counselling, UOC was already on its way to student-centred learning which has now become part of the Bologna reforms. Putting the student in the centre must have made the adaptation to the Bologna requirements somewhat easier. This was confirmed in an unpublished 2007 interview[62] with the Vice-Rector for postgraduate affairs of UOC:

> *"We easily meet some demands because we have been forerunners from the*
> *very beginning in the field of student-centred education for instance. We also*
> *have an Erasmus charter which allows us to develop international exchange.*
> *Of course we are different here again: our students have no need to be present*
> *physically in Barcelona. As a result we stress internationalisation at home*
> *which fits perfectly with our students, mostly adults at work."*

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[62]   Bonte (2007). Unpublished interview for the Flemish Higher Education review DELTA of which, I was the responsible editor at the time.

This quote also refers to a different internationalisation model[63], different from the model of travelling to high ranked research institutions, which has been prevalent until now. This is, however, not the focus of this thesis.

6.4.2. The UOC student is still a client but a committed one.

The UOC student is still entitled to a good service in a motivating learning environment, but he or she is also expected to become a committed participant. Time and space are still flexible, but that the student is expected to become the owner of his/her learning process.

The asynchronous teaching model is still at the core of the UOC delivery. However, by 2009 for some courses, synchronous aspects had been added. For instance, for the new MBA course, two residential weeks were added; one at the beginning and one at the end of the course. This was necessary because companies were asking for a confrontation between executives and their managers, and for face-to-face networking among their employees.

Sangra (2007) noted that UOC tried to respond to student needs by offering areas of study which are of interest to society and but which do not compete with more regular fields offered by traditional HEIs. Courses are now offered in more fields[64] with new areas added, such as Arabic and Islamic studies[65].

In the UOC educational model, the student was still central, but the role of study material changed. The student was no longer be served by having only ready-made materials. Students receive something similar to a learning guide, which requires them to take control of their

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[63]   http://www.theglobalonlineuniversity.uoc.edu/ (August 10, 2009); courses are offered in English, Spanish, Catalan and French.

[64]   Information and Communication Sciences, Health and Environmental sciences, Law and Political and Administration Sciences, Economics and Business, Humanities, Computer Science, Multimedia and Telecommunication, Languages and Cultures, Tourism, Psychology and Educational sciences.

        They offer the three approved Bologna degrees (bachelor, master and PhD). Besides the second cycle master degree, the International Postgraduate (confusing terminology since in English this term is usually used to indicate studies after the master degree) Institute also offers post graduate programmes created by the Institute, customized training for institutions and companies, open programmes and entrance courses for students under 25 years old.

[65]   http://www.uoc.edu/portal/english/la_universitat/sala_de_premsa/noticies/index/html (noticia 07/07/2009) (July 22, 2009)

own learning process, with counsellors and tutors acting as mentors (and content coaches). In a 2009 interview, the Vice-Rector for innovation saw it as follows:

"E-learning is at a very interesting point, in that we are accumulating sufficient experience and knowledge to improve the quality of this type of education. I believe that it is a good time for methodological and technological innovation in e-learning[66]".

As noted in section 5.5.1., the pedagogical model of UOC was from the beginning, attentive to the learning experience and the learning needs of the student. Initially, the model was based on "content" (good didactical materials) and the virtual classroom was used for interaction about the material.

This initial phase can be seen as rather static compared with the possibilities of ICT in 2008-2009. The next generation virtual campuses were more and more based on "user needs" and flexible e-learning models. The most recent generation is based on a socio-cultural model with a focus on activities such as sharing of knowledge in online communities. This is reflected in the new model of the virtual campus 5.0, described further on in section 6.5. (campus project).

It is often argued that this way of learning is not adapted to (young) people getting their first degree since they need human interaction on a physical campus (see section 3. 4.). However, in this virtual university an effort is being made at reducing the gap between the human computer interaction and e-learning systems. Therefore, attention has been focused on the human aspects when dealing with ICT, rather than on the computer interaction. A learning environment that engages and motivates students to learn, needs to take into account an affective dimension such as opinions, attitudes, emotions towards a field or a medium (e.g. fear of mathematics, of computers) (McLeod, 1992) when acquiring knowledge (also discussed in section 2.4.4). The e-learning experience has been improved by integrating the affective dimension and making it an enjoyable experience.

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[66]   UOC Editorial office, 2009 (March), Interview with Begonia Gros, "I imagine the university of the future as being much more open and flexible".
http://www.fuoc.es/portal/english/la_universitat/sala_de_premsa/entrevistes/2009/bego (September 21, 2009)

Methodologies for redesigning the e-learning experience were being developed in UOC (de Lera, Mor, 2007, 2009). For example, the ENJOY guidelines for designing engaging e-learning environments focus on the homepage, the community tools, the structure, design, functionalities and other elements of the virtual campus that could motivate and engage the student if designed properly (de Lera, Almirall, 2008, p. 1). The guidelines for designers, developers and learning technologists include:

- "Personalization: student should feel like a person and not like a user

- Identity: utilizing real images to help the student identify faster with the values and the community

- Brand: the values of the institution should be reflected in the virtual environment to reinforce the relationship between student and institution

- Community: making options to communicate and participate, visible and easily accessible

- Surprise: introducing surprise elements or special events in the initial entry pages or in strategic locations to make students feel they are part of a creative and dynamic community

- Innovation: integrating innovative elements in the virtual environment (new trends already mentioned in the media)

- Zen: no overload of text in the screen or unnecessary noise; use of white spaces, photographic or graphic elements

- Search: providing shortcuts by ensuring information to be found after a simple search

- Clarity: lively and bright colours to facilitate interaction, reading and information visualization

- Situation: ensuring that the student quickly recognizes the structure or map of the environment

- Aesthetics: a consistent aesthetics throughout the tasks and objectives

- Recognition: utilising standard icons and symbols that can be easily and quickly understood " (based on de Lera, Almirall, 2008, p. 2)

The redesign of UOC's virtual campus benefited from these guidelines. An effort was made to make the learning process entertaining "without downgrading academic standards".[67] Teaching materials became more diverse. Open resources were introduced. The initiative, "TRIA!"[68], launched in early 2009, offered flexible mobile teaching materials, which were able to adapt to the specific needs of each student in their specific situation. Three electronic formats were available: e-books, audio books and video books[69].

Web 2.0. technologies were increasingly being exploited. Social tools, such as blogs, wikis and social markers, facilitate collaborative work. Multimedia content made it possible to offer multidimensional content. Advanced communication systems, such as video conferences or collective intelligence systems in forums, provide flexible and clear communication adapted to each situation. 3D virtual environments based on videogames permit interaction with people and with objects simulating real situations.

These new technologies make it possible for students to generate learning resources themselves. Virtual learning spaces change and learners take control over their learning process by creating their own learning spaces. They can do this because aggregation of data and services from different sources has become possible. Communities of learners can share their own learning spaces with others. This is different from communities of practice, which are people sharing their ways of doing.

This new UOC focus on learning required the adaptation and training of internal professors or teaching collaborators involved in teaching. Fulfilling the learning needs of the students required a different mindset from "fitting in" with the rules and the customs of their discipline for research (see section 2.3.1. developments within the disciplines). In section 2.4.2, I explained that a changing student concept can challenge the teacher to find proper processes to interact with an increasingly heterogeneous audience.

From Sangra (2006), I also had the confirmation that student opinion still played an important role at UOC. Quality evaluation at UOC takes place through student surveys and online

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[67]   www.uoc.edu/portal/english/la_universitat/sala_de_premsa/noticies/2009/March 4,

[68]   TRIA means "choose" in Catalan

[69]   http://www.uoc.edu/portal/english/la_universitat/tecnologia_uoc/novetats/list.html (list with new technological initiatives) (March 20, 2009)

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forums. This is necessary to better fulfil student needs and to evaluate their satisfaction levels, and their perception of the services received. It also enabled UOC to validate its pedagogical system and its innovations.

Student satisfaction has always been a very important performance indicator. It is therefore rather surprising that during the interviews with members of the EUA evaluation team in 2006, some students told the EUA evaluation team, which had been carrying out a peer evaluation of the University (published in 2007), that they felt themselves to be in the "third division" and that their degrees are not well received (Senges, 2007). I see this remark from UOC students to EUA as a manifestation of the difference between satisfaction with the process of getting the degree and satisfaction with the reputation or "market value" of the degree.

However, I found out that the above (section 6.4.1.) mentioned Office of Learning Technologies was still going for a 100% perceived satisfaction by their users. Service quality is the result of a comparison between expectations and perceptions of performance. Valldosera and Deu (2004) found that UOC students are highly committed to online satisfaction surveys. The participation rate and the quality of their responses were high. Martínez-Argüelles et al. (2010) explain the importance of measuring how students perceive quality of service in online higher education. They show how UOC students perceive online higher education services (not only the core service, but also the peripheral services such as the administrative and back up services). They found that the learning process (guidance and support received, assessment process, helpfulness of responses received, response time and balanced workload), and the administrative and back up services were considered as important quality dimensions by students. Martínez-Argüelles et al. (2010) suggest that their recommendations for UOC managers with regards to these important aspects could be useful for online courses and degrees in general.

The UOC focus on student (client) satisfaction is still strong, but a serious effort from the student is still required since they are expected to take responsibility for his/her own learning. Although the student can still benefit from a very good service, the Vice-Rector for postgraduate studies mentioned during a 2009 interview:

> *"UOC stresses now more that an effort from the student is needed as well"*.

Student concerns about quality are an indication of what became apparent during my second research period: the fact that UOC was working on its brand as a "real university" and

therefore wanted to keep up with quality standards currently put forward in Europe. This also fitted in with the strategy of being a full partner in the Catalan public university system. In a 2006 article about UOC written for UNESCO, Sangra elaborates on lessons learned by UOC and makes some recommendations. Among others, he emphasizes the need to achieve credibility through quality:

> *"Some conventional higher education institutions are putting virtual universities under permanent suspicion. Moreover, the emergence of companies using technology to commercialize education is threatening the existence of virtual and online education. Virtual universities can best deal with this by working to ensure a high level of quality, and denouncing those virtual education projects that are of poor quality. A strong commitment to quality development is fundamental to the success of any virtual university"* *(Sangra, 2006, p 34).*

This is a key issue in the sense that a newcomer such as UOC, with a new concept, does not fit the established box-ticking of existing quality systems. This brings me back to my previous remark (section 6.1.), where I mentioned that UOC withdrew from the EFQM model and adopted the discourse about the quality models of the traditional universities, which do not always fit the innovative models of the newcomer. Traditional systems, for instance, are supposed to check the content of curricula and the existence of written materials. This check seems to be rather difficult in a dynamic system of knowledge construction in which the student plays an important role.

Therefore, more recently, UOC has been working with the Spanish and the Catalan quality agencies to develop quality indicators in the domain of virtual learning. After almost 15 years of experimenting with e-learning, they have some experiences to share and some improvements to suggest. I will discuss this in chapter seven (Features observed).

6.4.3. The student and their relationship of students with tutors and counsellors is subject to constant innovation

A feature of change between the two research periods (2002-2003, and 2007-2009) is that more commitment is now expected from the student, as I already pointed out in the previous section. Staff development is being reinforced for tutors and counsellors. First, I elaborate on the students.

The dynamic and flexible educational model is now more centred on the learning activity of the student (e.g. Innovation in the teaching process for the course 'introduction to mathematics'' for engineering students. Vinuesa, Fornos, 2007).

It is directed towards collective participation and knowledge building[70], in an interdisciplinary perspective. The latter aspect applies most specifically to the PhD programme. Collaborative learning takes place through methodologies that involve: resolving problems, project participation, product creation, discussion and enquiry[71].

The study and learning planning embedded in the contract between the student and their tutor, is extremely important. It is adapted to the student's knowledge, interests and needs. Study is flexible, taking into account the personal and professional reality of the students. The rather linear, static study plan, together with diverse teaching materials, becomes a learning guide for the student who can also generate and share their own resources. Corcoles et al. (2006) refer to teaching plans that involve aspects of instructional design leading towards student centred personalization and linked with other aspects such as materials, resources, activities and a teaching calendar.

The experience with continuous evaluation continued, which made UOC well prepared to follow up on Bologna requirements in this respect. The assessment structure depends on the type and the qualification of the course:

- Continuous assessment is carried out online throughout the semester. At the end of the course a validation test on site takes place (the test can be carried out online for students living abroad). The validation test focuses on aspects of continuous assessment activities carried out throughout the course. The test aims at certifying the identity of the student (the student him or her self carried the continuous assessment activities out during the semester). The test also demonstrates the understanding by the student of the concepts and techniques used in the assessment activities (validation of the learning process).

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[70]   See also research projects from the Group for research on interaction and educational influence (GRINTIE) funded by the Spanish Ministry of Science and Technology.
http://www.ub.edu/grintie/GRINTIE/ang/research_ang.html

[71]   http://www.UOC.edu/portal/english/la_universitat/model_educatiu/descripcio/index.html (October 9, 2009)

- At the end of the course, an exam is held on site in one of the UOC support centres in Spain.This is a mandatory exam (a written examination is still required by the Catalan law) to ensure that the students have a minimum level of on-site final assessment, besides the continuous assessment, which takes place earlier during the semester.

For the masters' degree, a final project is required. Pilot projects, such as the e-portfolio project in 2005-2006 for doctoral students, may lead to more innovations (Barberà et al., 2007). The internet application used for the project allows students to present themselves. The application also has a section, which lists the five research competences students have to master. Another section allows the teacher to monitor the learning process (through on line conversations, pictures, videos, comments on a weekly online (one page) student diary). The e-portfolio of a student provides evidence of the progress made by a student and enables the teacher to assess the progress made and to give feedback to the student. Future features may include the previous work experience of the student, which can be validated in the educational context, which means that credits can be given for prior competences acquired by carrying out a job.

Students are not only receiving an education in a specific field. They also become competent in working on the web and in a network. Students can access the virtual campus and the classroom from a wide range of devices, such as computers, personal digital assistants (PDAs) and cell phones. Learning is increasingly more interactive in order to create a sense of community. It happens in collaboration and leads to knowledge created in a shared way. A group of students comes together to accomplish a specific learning agenda together. Learning is a social process that takes place in an online group of students participating in the same course.

Tutors and counsellors

Research carried out by UOC researchers (Ernest, Hopkins, 2006) pointed out that teacher support and development are very important in an online environment. A sense of community should be fostered among online teachers, and partnerships have to be built with other university departments (such as coordinators, instructors, student counsellors, technical support staff and administrators). Besides technical skills, new pedagogical approaches are necessary. Guasch et al. (2010) suggest that there was not enough attention given to the interdependence between technology and the associated pedagogical model. They found that the following roles or functions were expected of the teacher in a virtual environment:

- A design and planning function: Planning takes place not only before the start of a course but also throughout the course. The relationships between teacher and other staff, between teacher and students and among students have to be planned in order to obtain the learning goals of the course. Monitoring and follow up needs to be planned as well.

- A social function: This function consists of actions which improve the relationship of the teacher with the students and among the students. It is important since emotional expressions (non-verbal communication) are difficult to achieve. It brings along the need to find new tools and behavioural patterns for establishing communication.

- An instructive function: The teacher needs to have expertise in the subject matter and to possess abilities to present content and facilitate learning by means of technological tools and resources.

- A technological function: The teacher needs to have technological abilities such as basic computer knowledge and some knowledge about multimedia and educational software.

- A management function: The teacher has to supervise and adjust the ongoing and virtual process (based on Guasch et al., 2010, p. 202)

In early 2009, the UOC strategies for the future and involvement of the faculty (including external teaching collaborators) in these strategies were explained to teaching collaborators during the first meeting[72] held after the new governing team took over three years previously. The meeting drew the attention of the universities and companies that provided teaching collaborators to UOC (for which financial agreements existed). Regular meetings were to take place in the future: general meetings for all teaching collaborators and specific ones for teaching collaborators from individual departments. One of the purposes of these meetings was to align teaching collaborators. According to the information obtained by one of the two content providers (E1, E2) to UOC courses:

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[72]   http://www.uoc.edu/portal/english/la_universitat/sala_de_premsa/noticies/2009/noticia (19/02/2009) "The UOC to assess faculty to accredit the quality of their work" (September 28, 2009)

"There are differences in quality between the services provided by the teaching collaborators."

Once it was the case that internal UOC faculty had to be assessed and accredited by the Catalan Quality Agency, the external teaching collaborators would also have to be assessed according to a newly designed procedure. The latter was not a formal requirement, but a UOC initiative, which was presented to the Catalan Quality Agency for accreditation, in order to ensure the quality of UOCs teaching collaborators.

The level of familiarity amongst the teaching collaborators with working in a virtual environment seems to be variable (depending on their experience and the competences they possess), which made the performance of external teaching collaborators uneven. Therefore, a new degree (Masters or postgraduate) was introduced to enable UOC faculty with lecturing experience to have some specialised training in teaching and working in a virtual environment.

6.4.4. The role of the professor: management as well as research.

During the first research period, I found that the teaching function had been organised in a specific way. Internal professor-managers organised the study field, the programme and /or the module offered: as indicated in table 7, chapter 5, external tutors and counsellors from other universities and companies were teaching and interacting with the students.

Knowledge provision was mostly outsourced to subcontractors, coordinated by an internal professor-manager. With the external contribution, materials were made that could be sold as a commodity to other universities. Content was created by a professorial team comprising experts from diverse fields of knowledge and educational methodology. These early outputs were written course materials, supplemented with multimedia (e.g. videos, Compact Discs Read-Only, CD-Roms). The materials were more static, not integrated and not easy to adapt to a dynamic context.

As of 2009 this organisation was still largely in place but some developments had taken place. Organising the teaching was still a cooperative process in which several parties were involved. The internal professors organising the study field, the programme or the module, now mostly had a PhD and the internal professors responsible for a specific course, were expected to work towards one. Occasionally, the IN3 Institute provided necessary support in

specific domains. Interactive learning strategies were being developed[73]. Learning guides (dynamic curricula), rather than static manuals (cfr. section 5.5.3., initially paper text until interactive multimedia could be delivered through the internet) became necessary. Content from external knowledge providers needed to be integrated in a dynamic learning environment at a reasonable cost.

Corcoles et al. (2006) noted that interactive multimedia solutions typically involve an expensive and long production process. However, production and maintenance costs can be reduced if one can collaborate with other institutions in putting course content together of other institutions. As a result of several UOC initiatives and projects to promote open access inside UOC, Rector Tubella signed the Berlin Declaration of 2003 on Open Access to knowledge in the sciences and humanities in June 2006[74]. The Berlin Declaration was an important step in the development of the Open Access Movement supporting the further development of solutions for legal and financial issues with respect to the dissemination of knowledge through the internet. The process of moving to open access changed the legal and financial framework of the dissemination of knowledge. The existing legal and financial frameworks do not have answers to facilitate optimal use and access of knowledge on the internet. Among the legal and financial issues are new rules with regard to copy rights and issues about access with permission or payment.

External content providers (E1, E 2) I interviewed in 2009 commented that:

> *"The development of these new up to date materials can be time consuming and costly and it is not sure how far the organisation can go to finance this. Since many of the internal professors are still doing their PhDs, there may not be enough knowledge in house to contribute in an effective way to new learning materials. Not all external knowledge providers they [UOC] used to work with are up to the task of contributing to this new way of guiding or coaching of learning. Some will only be willing to deliver this contribution at the right price".*

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[73] http://www.uoc.edu/portal/english/la_universitat/model_pedagogic/materials_i_recurso... (May 25, 2009)

[74] Berlin Declaration on Open Access to knowledge in the Sciences and in the Humanities, 20-23 October 2003. http://www.oa.mpg.de/openaccess-berlin/berlindeclaration.html

6.4.5. The emerging research model – combining teaching and research

By 2009, IN3, the UOC's research institute, had a top management team of four people, four technical staff members and fifteen (research) group leaders, of which two were also involved in the top management team. Additionally there were ten researchers and twenty eight PhD Fellows or Interns and eight research assistants, some students in training, visiting professors and visiting scholars[75]. From UOC facilities located on the outskirts of Barcelona in the Mediterranean Technology Park of Casteldefells, IN3 moved to a Centre for Information and Communication Technology, the new Media-TIC building in Barcelona in September 2010 together with the e-Learn centre[76]. This physical deployment of researchers in one place seemed at odds with the virtual deployment of UOC teaching and learning activities. Does it mean that an information and technology hub such as the TIC building, "designed to incubate, generate, support and diffuse new ideas, research and development in ICT" (IN3 website), inspires researchers working in this environment?

IN3 gives support to professors and researchers in academic and scientific aspects and in areas of administration, monitoring and promotion. Research is disseminated by publication on the internet, by editorial activities and by cultural activities in the territory.

Since by 2009 there were now more professors with a PhD involved in organising teaching and learning, it looked even more interesting to come back to one of my earlier concerns about research. During my first research period, some professors involved in organising teaching and learning had been worried about their opportunities for carrying out research. Senges (2007) argued that the business-like culture was hindering the academic culture. Several professors, who joined UOC in the first decade, did not (yet) have a PhD and found it rather difficult to combine study for a PhD with their daily tasks of managing virtual study programmes. Many did not even try.

Senges (2007) argues that it was the intention of the first Rector to limit the growth of tenured faculty and researchers in order "to guarantee agility and effective leadership". Such sentiments have to be seen in the context of the early days when the teaching mission was put

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[75]   http://in3.uoc.edu/in3web_eng/layout/set/print/about_the_in3/people (July 23, 2009)

[76]   http://www.uoc.edu/portal/english/la_universitat/sala_de_premsa/noticies/2010/noticia (August 30, 2010)

forward according to a low cost model as far as faculty was concerned, and where the administrative staff were considered (perhaps mistakenly) as the most important cost factor. During my interviews with the first Rector in 2002-2003, he expressed the importance of research for a university, but, at that time, I found that UOC did not have a proper model to integrate research within its vision (see section 5.7.).

The IN3 institute was a first step in the research direction. In their 2001-2004 programme based contract[77] with the Catalan Government, UOC aimed to expand IN3 activities and to assure its competitiveness, as measured by the number of publications (in scientific outlets) in a certain year. Furthermore, UOC hoped to increase the participation of the internal professors in this matter. At first, this invitation was widely applauded by many professors. Some simply missed carrying out research; others were concerned not to lose face with their peers. Either way, a majority of the professors volunteered to take on research activities for IN3.

However, during my interviews in December 2002 (see section 5.7.), it became already clear to me that, some internal professors started to feel that this initiative had merely increased the pressure and their workload, and had caused a lot of confusion about how to organise their working weeks, as the "managerial" profile, required to be a successful professor at UOC, differed completely from the characteristics that a successful researcher needed to possess. The combination of manager/researcher turned out to be significantly tougher than many professors and UOC management had thought.

In 2006, the new Rector adopted a clear policy towards establishing research as one of the important pillars of the university. Academic staff members were expected to spend more time on research. Research assistance increased and research groups were established. Teaching staff would be allowed to spend a percentage of their time on research (discussed herafter).

As at 2009, internal faculty members had an organising role in teaching, but they were also expected to carry out research. More integration with the research institute (IN3) exists. In order to facilitate their organising role in the teaching and learning process, the development of an administration was set up to support internal faculty in their teaching tasks. This gave them a certain advantage compared with other public universities, which are limited in the

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[77]   More about the programme based contract formula between governments and universities in Catalonia: Vilalta (2001).

number of staff they can employ as teaching support staff. Other public universities do not have external teaching collaborators such as tutors and counsellors, nor a well organised administration to support them with their teaching tasks. According to Cleveland-Innes (Ruffini, 2008) integration of research in the UOC system is challenging in terms of time and workload. She emphasized that specific policies, support structures and reward systems should be in place to encourage research.

As said before, the Rector Tubella wanted to increase the research capacity in terms of quality and quantity. In the programme contract 2005-2009 with the regional government, she negotiated for more money in order to increase the number of professors and to free up time for professors to carry out research. According to their contract, teaching staff can spend about 30% of their time on research, often as part of the research groups led by IN3 staff.

By 2010, the percentage of faculty members with a PhD had increased from one third to about two thirds of the internal faculty.

In 2006, the new Rector wanted to increase the research focus of UOC with the support of the existing external advisory board. Indeed, an International Scientific Commission was set up by UOC in 2002, which "only met a few times and did have little opportunity to collaborate with UOC researchers" (Senges, 2007, p. 232). She asked this commission for advice on the way ahead in the research field[78]. They came up with a research map and a call for research groups and projects. Accordingly, in 2006, IN3 identified twenty nine internal research groups that would allow better planning and visibility of the research activities of UOC professors and researchers, but IN3's focus was still on research related to the information society[79]. UOC was successful in having eleven research groups recognized by the University

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[78]   Donate, A. (January 2007) Interview with Imma Tubella, "This year we have built the foundations that we wanted" http://www.uoc.edu/portal/english/la_universitat/sala_de_premsa/entrevistes/2006/tube (September 29, 2009)

[79]   such as online learning, electronic governance, the new economy, virtual communities, the network society, internet and daily life, psychology and health network, youth and new technologies, information and knowledge management, the new media, free software, software engineering, copyright and the mathematics network.

and Grant Management Agency (AGAUR)[80]. The Catalan government also decided to fund four research groups.

By 2009, UOC was fostering research following the advice of the above mentioned International Scientific Commission[81] who had a mandate is to assess the academic performance of UOC by assessing once a year the research groups of the university[82], to oversee the quality of the PhD programme by assessing its annual progress, and to advise the Rector on research strategies.

The virtual PhD programme on the Information and Knowledge Society[83] has also become more selective in accepting PhD students with the aim of raising the quality of PhD theses. Today (2013) research activities are carried out by 400 researchers working in more than 30 research groups. These research groups are linked to a (teaching) department or to the research centres IN3 and the eLearn Centre[84].

What about the unity of teaching and research, important for traditional universities?

If the professors were now carrying out more research, it could be expected that this would influence the organisation of the learning processes for the students. In a place where the needs of the lifelong learners were being met by using interactive multi media tools, this implied that an attempt would be made to improve the academic quality of the learning processes and the academic image of the whole institution. When asked in a 2007 interview[85] if quality teaching was possible without research, the Rector put it as follows:

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[80]   http://www.uoc.edu/portal/english/la_universitat/sala_de_premsa/noticies/index.html, "Eleven UOC research groups officially recognized by AGAUR" (07/07/2009) (July 22, 2009)

[81]   http://in3.uoc.edu/index.php/in3web_eng/layout/set/print/que_es_1_in3/comissio_cienti (July 23, 2009)

[82]   http://in3.uoc.edu/in3web_eng/layout/set/print/groups_and_programmes (October 3, 2009)

[83]   The PhD programme has become one of the four divisions of the new Centre for e-learning (and innovation).

[84] http://www.uoc.edu/portal/en/recerca-innovacio/index.html (August 13, 2013)

[85]   Biosca, C. (April 2007), Interview with Imma Tubella "We have to make the move from a great project to a great university", http://www.uoc.edu/portal/english/la_universitat/sala_de_premsa/entreveistes/2006/tube last consulted 09/29/2009

"If you want a good university, research is vital. Research helps the teaching staff to improve the education offered and to create transfers between that researched and that taught. The UOC has created a university from nothing and on the basis of a great deal of research. But on having focused greatly on developing study programmes, which was essential, there has been no direct mandate to carry out research. However, I feel that a turning point has come and universities have to carry out research because, if not, they become good academies, or what are known as teaching universities."

It is not clear how IN3 and the UOC staff carrying out research could support all the fields that were being offered and taught at UOC. Except for the PhD programme (with a focus on ICT), I did not see how the research link with teaching and learning in study fields (such as undergraduate, postgraduate or executive education) operated. I wonder whether there was enough knowledge provided in-house or through external providers to put the learning materials/guides together according to the latest research.

By 2009 the practice was that professors could make an agreement with their Director (study field) about the division of their time between research and teaching. I do not know to what extent IN3 was involved in these decisions. During my interviews in 2008-2009, I was told that a final document with the policy towards the faculty about their working conditions would be prepared for summer 2009. Following guidance of the Rector, this policy document indicated "why it is attractive to stay at UOC". I could not evaluate this document and its effect because it was published after my interviews with UOC in January and May 2009.

However, according to the UOC annual report 2008-2009, new faculty policies were introduced about personal development and assessment of faculty. A new faculty induction and mentoring process was defined.The teaching activities of the faculty were to be assessed based on regulations in the teaching assessment handbook, approved by the Catalan quality agency. The assessment methodology for research activities of the faculty was also specified.

As of 2010, many questions remain for which I do not have a clear answer and which will be addressed in future research:

- What happens if research is needed as an input for teaching? How does it work?

- Are professors involved in teaching also carrying out their own research in fields which are not of interest to IN3 but are important for input in the teaching and learning of the students?

- Can research be delivered by somebody of IN3 at the request of the academic organising teaching if it is related to an IN3 subject?

- Is IN3 giving any input for a study field/programme/subject if it is not related to its subjects?

- If not, do they work with outsiders on these issues? There are indications that outside knowledge producers are still involved.

As one of the content providers I interviewed said*:*

"Only research related to ICT is being carried out. In my view there is not enough in house research to support all the fields that are offered. I do not see a real link with the teaching department. In IN3 there seems to be nobody to support executive education."

In the next section, I elaborate on the importance of the Office for Learning Technologies, which contributes to research on e-learning and its technical aspects.

6.5. Technology for the service of the student; challenging issues

The Office of Learning Technologies plays an important role at UOC. It is in touch with experts with regard to learning technologies. In 2009, I was able to interview the CEO of a company (E4) working with UOC, who had former experience with a major IT company and was a specialist in modular systems. It is in this domain that UOC profits from the benefits of open innovation by using these external sources of ideas.

The Gartner Group (2010) distinguished five key phases of a technology's life cycle when interpreting technology hype:

1. "a technology trigger (breakthrough technology),
2. a peak of inflated expectations (some success stories and some failures),
3. a phase of disillusionment (less interest unless improvement of products),
4. a slope of enlightenment (benefits are understood, second and third generation products appear), and

5. a plateau of productivity (start of mainstream adoption)".

When comparing these phases with my observations of UOC, it seems that dealing with technological innovation in UOC went through several phases (see Table 9, Chapter 6):

- UOC uses the trigger "internet"

- UOC becomes a success story

- UOC does not take any risks with new ICT products and becomes complacent

- The hardware/software structure becomes too complex. Transition period at UOC

- UOC understands the benefits of a real IT strategy

Table 9, Chapter 6: Dealing with technological innovation in UOC

Phases of technology life cycle	Time Periods of UOC operations
Innovator	from the start in 1995 until the end of the internet bubble
Ahead of the game	until first research period 2002-2003
Complacency but new technology, new competitors	start during first research period intermediary research period 2003-2007
Overtaken by others	intermediary research period 2003-2007
Catching up	from second research period 2008-2009 onwards

Source: De Jonghe (2013)

After facing the complexity of its software and hard ware structure due to the volume of individually documented and highly complicated interrelations and interfaces (Senges, 2007, p. 206), UOC realised how important an up to date learning platform is for its learning strategy and that technology developments should be closely monitored and implemented if important for the learning strategy. Valverde, the Vice-rector for technology at UOC,

observes that technology development should be part of the educational model development, serving the student and the academic staff[86].

UOC took a 'learning stack' approach by deciding no longer to rely on a single learning management system. In 2009 (after the Gartner report of 2006), it was going to build a service-oriented architecture as a layer below the learning management system. This architecture would increase the possibilities to integrate the increasing number of online learning tools (Trounson, 2012). The UOC Campus 5.0. makes the interoperability possible between e-learning tools and services, learning platforms, social networks, contents and organisations. This third generation of learning management systems is a set of services and no longer a product (first generation) or a framework (second generation) (Santanach, 2012).

The development of the UOC virtual campus went through several stages. In the beginning UOC was innovative by using the internet as a way of communicating and by starting a virtual classroom. From 2002 on, their technological platform had become outdated. According to a UOC manager, there was a lack of ambition to further innovate since users had become accustomed to the virtual campus as it was. However, users were developing a technological sub-culture by using non-approved software and services since they could not pursue their individual interests and needs, with regard to the e-learning course/application they wanted to develop (Senges, 2007, p. 256). There was also a lack of budget to undertake desirable innovations (Senges, 2007, p. 248).

Knowledge provider (E1) provided another reason and as follows:

> *"Typical for the early stages of a pioneer, they did not see in time the importance of some developments such as the open source movement (which needed another platform). Traditional universities were copying them and maybe doing better".*

UOC's post 2003 pedagogical focus on learning could have benefitted from a more developed ICT platform that allowed for flexible e-learning and socio-cultural models. Was it the initial

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[86] Press room UOC, News 01/07/2011: Gartner highlights fifteen years of technological evolution at the UOC. http.www.uoc.edu/portal/en/sala-de-premsa/actualitat/noticies/2011/noticia_107/noticia_107.html (August 15, 2013)

success of being at the right time in the right place that blinded them? During our interview, the new Rector answered:

> *"The initial internet bubble prevented us from doing a proper follow up of the IT."*

The subsequent collapse of the internet bubble put the future of the internet-based companies on hold and led to complacency[87]. Because of the economic downturn, assessments of realities, costs and pay offs of distance learning were made (Epper, Garn, 2004).This technological complacency was seen as a serious danger to further development of UOC by the new Rector and her management team starting at the end of 2005/2006. It had to be tackled immediately. Sangra (2006) argues that updating technical infrastructure is a permanent challenge, for which users and "well-known" external experts were consulted. Senges (2007) noted that the IT consulting company, the Gartner Group, was called in 2003 and in 2006 to make an analysis of the IT situation (Gartner Group, 2006). The IT consultant identified nineteen aspects of UOC's IT situation, which were crucial for further technological development at UOC. Out of these nineteen aspects, only three did not need any immediate action. A profound re-organisation of the systematic architecture of the IT system was recommended (Senges, 2007, p. 213). Senges (2007) claimed that, despite the technological difficulties to overcome, UOC could still be considered as a knowledge entrepreneur because of its early experiments with the web.

The Campus project[88] (Santanach et al., 2008) project enabled UOC to develop a new virtual campus. The project was funded by the Catalan government under the condition that it would also benefit the other Catalan universities. The Secretariat for Telecommunications and the Information Society (STSI) of the Regional Government of Catalonia, who promoted the project, wanted an agreement between the major Catalan universities to provide online higher education through an open source virtual campus. The benefit for the other Catalan

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[87] In 2004, Dougherty (O'Reilly Media) and Craig Line (Media live) coined the term web 2.0, when they performed a study on the web and confirmed that after the downfall of the dot.com companies, those that survived, offered new services based on applications that created dynamic pages and interaction with the user. (Vallez, Marcos, 2009).

[88]   http://www.campusproject.org

Universities, the possible use of the new open source based virtual campus, seems to have been a condition put forward by the local government (Senges, 2007, p. 249). The high quality pedagogical materials (with several interactive media solutions) developed by UOC could be made available to other institutions and *vice versa.* It was expected that UOC could benefit from other institutions' efforts, which would reduce the expensive and long production process and the maintenance costs.

Corcoles et al. (2006) noted that the technology behind OER was being extensively studied by UOC with a view to developing a virtual centre for analysing and promoting the OER concept in the higher education sector in Europe. The centre would provide practical information required to create, share and re-use inter-operable digital content, tools and licensing schemes. It would also offer support services by giving tutorials, guidelines and best practices. A group of experts and a community of practice would be set up. UOC participated in a European project, OLCOS, to set up open e-learning content observatory services, which produced a roadmap in 2012 (Geser et al., 2012). UOC became a partner in a European project, OER test (2010-2012) with the aim to support mainstreaming of OERs in HE and to teast the possibility of assessing learning exclusively achieved through the use of OERs (www.OER-europe.net).

6.6. Conclusion

In this chapter, I reported on the significant changes which took place at UOC since my first research period. The table below summarizes these changes (see Table 10, Chapter 6).

Table 10, Chapter 6: Key changes in UOC over research period

Pioneer 2002-2003	Next stage 2008-2009
From a private foundation to a public foundation	
Private Foundation	Public Foundation
Public/private construct	Still a special treatment?
Social goal (through business like attitude)	Social goal (public responsibility)
Organisational model: from entrepreneurial project to a "real university"	
Entrepreneur with former rectors' experience	New Rector, new style

Academic, managerial and business dimension in balance	Transversal model/vice rectors in charge supported by the administration
Network of companies	Companies with direct link to core Other networks (research alliances, open source…)
Flexibility	Flexibility still needed
EFQM, too much for business?	Quality of teaching, learning and research crucial for a "real university"
From a pedagogical model with reorganised processes to a constructivist approach underpinning the pedagogy; and open guided innovation in teaching and learning	
Students as clients	Student as participant
Asynchronous time/place Entitled to good service ICT user needs to be fulfilled Materials are central (rather static)	Asynchronous time/place Service still important, also student commitment Ownership by student of learning process Flexible e-learning models socio-cultural model; on line communities Learning guide
Tutors and counsellors (external) Knowledge providers (external)	Still in place Staff development important Assessment of teaching collaborators External knowledge providers for teaching and executive education still in place

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Professor – Manager (internal)	Professors with PhD preferred
	Some links with research institute IN3
	Greater involvement in research
	Staff development
	Assessment of professors
Research model as part of the mission	
Search for a model	Focus on Intra and Interdisciplinary Knowledge about ICT and its impact on society
Technological model	
Reorganisation of processes	Learning technology essential but supportive of constructivist pedagogy
Web based and virtual classroom	Virtual campus 5.0 "My UOC"
	Open access to educational resources (OER) developing
	ENJOY guidelines

Source: De Jonghe, (2013)

In the second research period it was striking how UOC had been working on its brand of being a "real university" by adopting the quality discourse and quality assurance methods of the more traditional universities; all this with the aim of being accepted by them. Meanwhile, UOC had been improving on the different aspects of their virtual model. In the next chapter, I will come back to some of these issues while discussing the answers to my research questions.

7.   To what extent is UOC different really?

In this chapter, I will discuss the response to the research questions (RQ) introduced at the beginning of chapter 4 (table 1, chapter 4), except for research question 6, which will be addressed in chapter eight. Through the research questions, I tried to explore to what extent UOC is different and, what is its basis for success (see section 4.1.). The research questions were the following:

RQ 1: What are the forces from the knowledge society affecting the strategic direction of the case organisation, UOC?

RQ 2: To what extent are the strategies of this 'virtual university' different from other universities with regard to the core values of HEIs, especially in respect of research and teaching and learning?

RQ 3: How does this university address increasing needs and pressures for performance that are present in contemporary academia?

RQ 4: What are the potential roles for ICT?

RQ 5: What lessons can be learned from the change processes followed by the case organisation?

RQ 6: How can this experience inspire or provide lessons for more established universities? (addressed in chapter 8)

In sections 7.1. and 7.2, I will discuss RQ 2 and explore to what extent the strategy of this virtual university is different from other universities with regard to the core values of HEIs, especially in respect of research and teaching and learning. The answer to RQ 4, on the potential roles for ICT to be found in the case studied, will be discussed in section 7.3. about the integration of the roles in the virtual campus. RQ 3 and RQ 5 will be discussed in section 7.4. in which I discuss how this university addresses the increasing needs and pressures for performance and what lessons can be learned from the change processes followed at UOC. RQ 1 about the forces of the knowledge society with an impact on the case I studied, have been discussed in the first three chapters and are confirmed and specified in section 7.5. (table 11, chapter 7 and figure 8, chapter 7). I will analyse my findings in accordance with concepts and frameworks presented earlier (mainly in chapters 1, 2, 3 and 6).

7.1. An organisation centred on learning and the student relationship. (RQ 2)

In chapter 2, I found that the core values of traditional higher education are still mainly professor-or faculty-driven and focused on research. I also pointed out that there are signs of a movement towards putting the learning of the student at the centre. To what extent is UOC different with regard to these values? The initial focus of UOC was not on research. A specific choice was made to focus on the student who combines learning with other projects (e.g. work, family) and appreciates easy access without limits of space or time (see table 6, chapter 5). A clear choice had been made in putting the students first (discussed in section 5.5.1.). The teaching process was and is still organised by several collaborating parties, as I will point out hereafter.

Organising the learning of the student becomes teamwork

In UOC, a focus exists on student learning for which a specific process has been adopted. Teaching services are delivered by several parties (explained in section 5. 6., Professors-manager, instructional designers, tutors and counsellors were involved at UOC), and a professor is not responsible for all aspects (as is often the case in a traditional university). This replaces the dominant and even exclusive focus of traditional universities on a professor-centred teaching approach (see section 2.4.5., The changing role of the professor).

At the institutional level, UOC managed the unbundling of these activities at different levels: at the level of the organisation, the individual and the network. At the organisational level, research and teaching do not have to be carried out in the same place; at the individual level, research and teaching do not have to be concentrated in one person and at the inter-organisational network, growth can be obtained by outsourcing (Duderstadt, 2000, pp. 298-300; de Boer et al. 2002, p. 27).

UOC's model is different from the conventional model, where an individual faculty member is responsible for his or her course with respect to the whole process of providing the course content and format and the teaching and the monitoring of the learning process as well as the assessment of the learning outcomes. At traditional universities individual professors produce written course materials and research has often become a separate activity and there are increasing calls for unity of research and teaching, usually meaning that teaching should be research-based (discussed in section 2.4.3. and appendix 5). However, several universities

have started experimenting with teaching and management teams, as I will discuss further on (see section 7.3. a new paradigm of a university?).

Development of the student-centred model

In section 3.3. (Potential for restructuring academia), I pointed out that ICT allows to redesign the conventional processes and practices of universities. UOC has, in the process of development, uncovered and developed new ways of teaching and learning using the latest technologies and, in so doing, has sought to become a high quality provider. UOC felt compelled to update its technology to be able to integrate new learning pedagogies based on collaborative learning. According to the concept of open innovation I discussed in the previous chapter (see figure 7, chapter 6), UOC was able to share its expertise with other institutions competent in new learning technologies.

My second research period led me to new thoughts in management studies, which caused the modification of my framework of analysis in the previous chapter and in this chapter. If I had thought of the concept of open innovation earlier, my framework of analysis based on the first three chapters would have been different. I could have indicated how UOC was able to find the most appropriate organisational model by using internal and external sources of ideas (section 6.4.1.). The EFQM framework would still have been useful to analyse my data (see section 3.7.).

Besides an adapted delivery platform, new learning pedagogies also required adapted materials, which are costly to produce (the need for interactive multimedia solutions at UOC was discussed in section 6.4.4.). By adhering to the open software and courseware movement[89], UOC could reduce the cost of developing courses on the web (discussed in section 6.5. Technology for the service of the student). As a result of the UOC research group working on intellectual property rights and the impact of technology and digital networks, the intellectual property rights contracts with UOC authors were modified or renegotiated. The aim was to be able to use the materials as open educational resources (OER) (Corcoles et al., 2006).

Distance universities at university level have existed since the beginning of the nineteenth century (Guri-Rosenblit, 2009, p. 7), and in most higher education systems they deliver distance education through a dispersed student population through correspondence teaching

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[89]   http://www.ocwconsortium

and not through ICT (Guri-Rosenblit, 2009). The production of rather static, high quality study materials is costly. The expenses of developing these courses are compensated by the reduction in size of the permanent faculty, by employing faculty from other universities on a part-time basis and by minimising the use of physical space. The reasoning behind this concept is that, as the student numbers increase, the cost per student decreases (Bates, 1999, 2001; Daniel, 1996; Peters, 2001; Guri-Rosenblit, 2009).

In this context, UOC started as an alternative, low-cost provider (knowledge delivered by outsiders, rather static materials, external teaching collaborators, limited number of internal professors coordinating the teaching (reported in section 5.6), more like traditional distance education, but using the web for connectivity. Teaching was delivered through the web, seen as a tool, but not as a means to change the way learning takes place. They did not have the overhead of traditional universities and few research expenses. UOC caused "low end disruption" of the market by using the web for distribution (the written materials, textbooks could be printed and sold to other universities!) and connectivity.

However, UOC also wanted to deliver higher quality student-centred learning. Meanwhile, the developments of the web created the possibility to offer this higher quality as noted in section 3.2., 3.3. and 3.6 where I indicated that ICT seems to have the power to transform learning and allows for integration of new pedagogies. UOC also realised the importance of introducing learning methodologies, which could be enhanced by using adapted technology. Interactive and collaborative learning on the web takes place using advanced technology. Staff development, including the external teaching collaborators, is taken seriously, as I reported in section 6.4.3..

The argument of Marginson (2004) that virtual universities have not attracted higher levels of enrolments more quickly because an online degree is a less attractive qualification than a face-to-face degree from a foreign country or a foreign campus in one's country, does not seem to apply to UOC, which has seen a steady increase in enrolments since its beginnings. More recently, business schools able to offer online degrees have also rapidly been increasing

their enrolments[90]. The "stigma" related to online learning is decreasing (Clarke, 2010).[91] In 2009, a UOC student put it as follows:

"I find the level required is higher than in other universities and that some day (we) will compare them and see that UOC students are very prepared when they finish their studies because they are not afraid to work"[92].

UOC has undoubtedly played an innovative role in the field of e-learning. It was able to create a university with a coherent strategy for integrating new technologies and by doing this it was different from other universities. There may be no political will yet to question the continuity between traditional secondary and tertiary education, but a virtual university such as UOC may show the way to an attractive alternative. UOC is "disrupting" traditional models of higher education.[93] The signs of this disruption are laptops, tablets and digital whiteboards available in universities in the developed world. The real innovation is in the software and the delivery of educational services and in the analytical tools that support the disruption (Taylor, 2013). Indeed, UOC is no longer only attractive for the traditional lifelong learning market, but also for the 18 year olds, the digital natives, as I was told by Rector Tubella during my interview with her in May 2009.Tubella et al. (2011) confirm that the group of students under the age of 21 enrolling at UOC, has been growing over the last 7 years.

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[90]   See the examples of U21 Global online Graduate School in Singapore and the Open University Business School (UK) cited in a Financial Times article of March 25, 2010 by Bradshaw, D. "Changes drive new teaching models"

[91]   Murat Tarimcilar, Associate Dean for Graduate Programmes, George Washington University cited in a Financial Times article of March 25, 2010 by Clarke Ch., "Flexibility and reach draw ever greater numbers"

[92]   Jordi Gonzalez Espinar, Student, Technical Engineering in Computer Management Administration and Computer Technician (Civil Service) http://www.uoc.edu/portal/english/estudis/testimo,ials/index.html (September 23, 2009)

[93]   Glenn M., (2008) Report "What does it mean to be educated in the 21st Century ?"about the Open Edtech Summit: Exploring Learning Solutions together, Barcelona 10-11 November 2008:At this initiative taken by UOC (37 people present), Michel Horn, Co-founder and Executive Director of the Innosight Institute was interviewed. He is also co-author with CL. Christensen of the book "Disrupting Class: How disruptive innovation will change the way the world learns". http://www.slideshare.net/timbuckteeth/what-does-it-mean-to-be-educated-in-the-21st-...retrieved from the web 07/22/2009.

Here I refer to the work of Christensen and Raynor (2003) about disruptive innovation, discovered during my second research period. They found out that in order to beat established competitors, a company has to succeed in making a growth business disruptive. Christensen et al. (2008, p. 11) see disruption as "the process by which an innovation transforms a market whose services or products are complicated and expensive into one where simplicity, convenience, accessibility and affordability characterise the industry". They present disruption as a set of theories "about how people interact and react, how behaviour is shaped, how organisational cultures form and influence decisions" (Christensen et al., 2008, V). These theories can be used by managers in the profit and in the non profit sector, who need to create new growth with predictable success in order to become the disruptors instead of the disruptees.

As indicated above, my framework of analysis applied to the first three chapters could have been based on the concept of open innovation and I could have argued how UOC was able to adapt its organisational model by analysing how people inside and outside UOC interacted and reacted. I would have indicated how behaviour is shaped and how organisational cultures form and influence decisions. I could also have linked this to the discussion about cultures in section 2.1. (pressures and resistance to change) and 2.2.1 (development within the disciplines). The EFQM framework (discussed in section 3.7.) would still have been useful to analyse my data.

UOC is offering an alternative for or even disrupting traditional models of education (Christensen et al., 2008). It focuses on a student-centred approach, takes into account the learning needs of each student, uses student-centred technologies and tackles the managerial and organizational challenges that come with this approach (reported in chapters 5 and 6; see also table 10, chapter 6, key changes in UOC over research period). Traditional models, with their ambivalence towards business and customers (discussed in section 2.3.1., Greenberg, 2004; Durkin and Mc Kenna, 2011), are resistant towards what the academics call the consumerism of the student (discussed in section 2.4.2.; Naidoo et al., 2005; Geiger, 2004). They are still guided by their disciplinary ways of doing. Each disciplinary knowledge community has its own identities, traditions, customs and practices (discussed in section 2.3.1.) and is reluctantly looking (Menand, 2010) at the demands of the students. Incremental changes take place based on the interpretation by the lecturer or under external pressures. I discussed the development of a student-centred approach in section 2.4.4., in which I referred to the pressures from the formal aspects of the Bologna transformation and to the emergence

of new cognitive theories in the psychology of education, which play a role in the development of the teaching concept. In sections 2.4.4. and 2.4.5., I explained the transition from the teaching concept to the learning concept and how this transition changes the role of the professor (while his guidance as an expert is still needed).

The developments at UOC seem promising. For the first Rector, using the possibilities of the internet was a wish or even a condition for accepting his function as a Rector. His original idea of building a virtual modern university, where the changing needs and expectations of students are at the centre of attention, seems to be working out. This is quite different from the usual concept of a "distance university", which emphasizes the "distance" as being far from a building and from the traditional professor giving a lecture, referring to an institution or professor-centred vision (Heydinger, 1997, p. 108). Bayne et al. (2014) suggest that, with the increase of distance education, new understandings of space arise, which have an impact on all types of education, on-campus and off-campus. They put forward that "sedentarist assumptions" are becoming out of date, not only for distance students but also for increasingly mobile learners present on campus spaces (Bayne et al., 2014, p. 581).

7.2.   Research: networked learning and knowledge production. (RQ2)

In figure 1, chapter 3 (Pressures on contemporary academia), I indicated the social (e.g. interdisciplinarity) and economic (e.g. partnerships) goals of the knowledge society and the roles for ICT in this society. In what ways are the strategies from UOC different from other universities with regard to the core values related to research?

Right from the start, UOC decided to focus its research specifically on the information society, hoping to have one day a worldwide impact on knowledge society research (reported in section 5.7.). UOC's research centre IN3 has worked together with many European institutions (universities, research institutions and technology companies) in joint research projects, many of them sponsored by the European Commission. Increasingly, their research is being funded by national and regional science agencies.

By focusing research on the intersection of different fields with ICT and the link with ICT and society, UOC made a clear decision, which will enable them to build up a strong profile in this domain. This specific research focus also differentiates UOC from other institutions, doing more comprehensive research in several domains.

Researchers

A particular aspect of UOC's research model (discussed in sections 5.7 and 6.4.5.) is that research is not always carried out by the same people as the ones in charge of organising student learning (see Contact North, 2012 about the need for integration of research results in teaching and learning). The research and scholarship incorporated in the teaching materials comes essentially from outside providers. This does not mean that the value of research is questioned. What is questioned is that research and teaching in a given subject need to come from the same individual person. In UOC, the professor in charge of putting the learning materials together has to know the research and the (external) researchers/experts in the field, but he or she does not actually have to carry out the research in order to provide adequate learning materials.

In section 2.4.3. (Pressures from the labour market on the academic agenda), I discussed how traditional institutions are trying to solve the tension between teaching and research by promoting the unity of research and teaching at the institutional level, which means that teaching should be research-based at their institutions. The unity of research and teaching (in one person) is probably less important as a solution as long as creative minds, from outside or inside the organisation, can add their findings to the academic content provided. In this respect, it remains a challenge to ensure that the results from UOC's increasing research and innovation activities are transmitted to the part time collaborators in order to integrate the new knowledge in the teaching and learning (Contact North, 2012; Ruffini, 2008 discussed in section 6.4.5.). Such a transfer of knowledge would require that the different Vice Rectors currently in charge of research, innovation and teaching share a vision on integration.

UOC encourages professors involved in teaching activities to participate in IN3 projects. Some professors may have difficulties with the way in which the research objective is being implemented, but they do not question the need or the value of research. The professor-managers can now also carry out their own research which can be reflected in the course they are putting together, supported by IN3 if it is related to ICT and their discipline. Research on ICT and learning, for instance, is used to improve the learning-teaching model (reported in section 6.4.1., Centre for e-learning and Office for learning technologies). Researchers from outside are attracted to work exclusively on the research side in the IN3 Institute multi-disciplinary research programme.

Academics in charge of student learning need to make an arrangement about their managerial work if they want to carry out research. Since new faculty policies were introduced in 2009-2010, professors at UOC have a personal development plan in which personal research has its place (reported in section 6.4.5.). Further, administrative staff are supporting the professors involved in organising the teaching with many tasks. This seems to be an advantage, which does not always exist in more traditional places.

As a result, UOC seems well on its way to face some of the same problems traditional universities have encountered when trying to juggle the demands of research and teaching.

I would like to refer to section 2.1. in which, I explained how institutional isomorphism, caused by pressures from the professions, can make institutions more similar to one another while trying to change their organisation. UOC demonstrates an alternative way to organise a university while at the same time wanting to be a "real university". It is successful in integrating technology in its core processes for teaching and learning but it still has a way to go in integrating its research results in its teaching and learning.

Partnerships and competition

In section 2.3.2., I looked at the impact of partnerships between regions or governments and higher education institutions and their importance in the knowledge society. By developing its research mission, UOC obviously entered into the competitive race with the more traditional universities. However, significant partnerships have been set up with other research networks, both nationally and internationally (section 6.1.). A strong partnership with the Catalan region and the other Catalan Universities exists. The White Paper on the University of Catalonia (2008) encourages synergies among the Catalonian universities. According to the Catalan Association of Public Universities, the White Paper was presented publicly in 2008 and has had a great impact in Catalonia and the rest of Spain as well as in several European Countries and discussion forums[94] (The White Paper is mentioned in section 6.2.2.).

Given the economic and social context, the research mission of UOC is considered crucial for the development of the region. For example, the interdisciplinary research project Project Internet Catalonia (PIC), supported by the regional government began in September 2001 and ended in July 2007. The PIC was carried out by faculty and researchers at UOC (IN3) in collaboration with several organisations and individuals with regard to data collection and

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[94]   www.acup.cat/en/llibre-blanc

survey field work. It consisted of sector studies on the characteristics and development of the information society in Catalonia (primary, secondary and university education in the network society, ICT and companies, internet and the audiovisual context, e-government and e-health). The research was presented at academic conferences and disseminated over the internet and published in books and scientific journals (based on the PIC website page)[95].

What will the strategy of UOC be with respect to the ranking game? It is not surprising that currently virtual universities are excluded from the important rankings. Most virtual universities have a strong teaching mission, which is not taken into account in the most important rankings. The webometrics ranking (webometrics website, 2013) also measures, in an indirect way, other missions like teaching or the so-called third mission, considering not only the scientific impact of university activities, but also the economic relevance of the technology transfer to industry, the community engagement (social, cultural, environmental roles) and even the political influence. According to webometrics, "research only (bibliometrics) based rankings are biased against technologies, computer science, social sciences and humanities, disciplines that count for more than half of the scholars and students in a standard comprehensive university" (webometrics website, 2013). UOC is included in the webometrics (Web Ranking of World universities) ranking (638 out of 6,000), which ranks 6,000 universities according to visibility (50%), size in terms of web pages (20%), rich files (15%) and scholars (15%)[96]. Four Spanish universities with a more comprehensive research profile are among the top 200 world universities in this ranking.

It could well be that UOC will create its own networks for ranking of virtual universities or for universities carrying out research on ICT across disciplines. Does UOC see itselves among the 200 top research places in the world for their specific field? The Director of the INR institute, Professor M. Castells (2009), states that different combinations between different functions of the university bring diversity in the system. He also favours rankings since they too bring diversity to the system. However, he claims that the methodology should be improved with regard to ranking criteria. Internal and external criteria for diversification are necessary as well as differences in the reward systems (e.g. salaries for professors, leave of absence).

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[95]   www.uoc.edu/in3/pic/eng

[96]   www.webometrics.info Retrieved from the web on 09/23/2009

According to Castells, production of knowledge, technology and innovation is necessary, but each university cannot be innovative in all fields. Therefore, the network university, where learning and knowledge are networked with other universities and other companies, is necessary. In a 2009 interview, UOC's Vice-Rector for innovation, Begonia Gros, suggested:

"I imagine the University of the Future as being much more open and flexible. I believe that it is important to think that much talk about lifelong learning is already a reality and that access and accreditation systems must be improved. In addition, we must consider a university model that incorporates innovation as a system to expand knowledge through more research and innovation in partnerships with organisations and companies."[97]

Many examples can be found in the UK and other European countries of universities, which are carrying out collaborative research with organizations and companies (e.g. Promotion of university-based collaborative research projects by the European University Association). This idea of course is not new, nor unique to UOC.

For the part of the mission which concerns teaching and learning, the virtual campus concept is crucial. Hereafter, I answer RQ 4 about the roles for ICT and elaborate on the importance of the campus concept on the web in more detail.

7.3.   The roles for ICT integrated in the virtual campus (RQ 4)

In section 3.4, I looked at the importance of the (physical) campus. The UOC model, with its virtual campus, is a challenge to the traditional professor-student relationship. It is attractive for HEIs, given a changing student body that is compelling HEIs to look for new pedagogical models (discussed in section 2.4.2.).

The difference between physical campus teaching and ICT supported teaching, not necessarily on campus, is sometimes seen as the difference between a community and an individual learning experience (see section 3.4.). One can wonder if face-to-face teaching on a campus really is a community experience. In many HEIs hundreds of students are sitting in a classroom getting lectures from an *ex-cathedra* professor, with fewer possibilities for

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[97]   UOC Editorial office, 2009 (March), Interview with Begonia Gros, " I imagine the university of the future as being much more open and flexible".

http://www.fuoc.es/portal/english/la_universitat_/sala_de_premsa/entrevistes/2009/bego retrieved from the web on 09/21/2009

interaction than on the internet (as I will explain below under the heading, "community"). Increasingly, students prefer to study (individually) together in public places such as the library where informal contacts can take place, where ICT is available and where rooms for group work are available (Freeman, 2005). Such spaces provide more social support and inspiration because students realise that other students are going through the same ordeal. The spaces serve to overcome feelings of isolation experienced.

Psychological elements important for learning

In section 2.4.4. (Development of student-centred approach), I discussed the concept of learning through others, in a learning community. Given the possibilities for social networking through ICT, the opportunities of a physical community, where personal contact is anyway not as easy as indicated by the many websites about loneliness on campus[98], becomes less important.

The virtual campus project and the current possibilities of the web profoundly change the ways teaching, learning (and research) can take place. Pedagogical principles are enhanced by the current possibilities of the web. Students are able to undertake their own knowledge construction, first for learning and later on even for participating in research, by using all the possibilities of the web, including virtual libraries (reported in section 5.5.2.).

UOC uses an innovative campus concept in an online education context. In section 2.4.4. , I discussed how acquiring knowledge and being able to demonstrate it takes place. I indicated that, among others, affective components with regard to opinions, attitudes and emotions towards a field are necessary. The UOC approach acknowledges the importance of enjoyable ICT use. UOC makes a serious effort to create an agreeable e-learning experience by implementing the ENJOY guidelines (mentioned in section 6.4.2). The ENJOY guidelines are a work in progress for designing engaging e-learning environments (de Lera, Almirall, 2008, p. 1). As I explain in section 6. 4.2. (ENJOY guidelines), UOC took great care in introducing all the emotional aspects in the design of the learning environment that can motivate learners since it has been strongly suggested that emotion may impact the experience of online learning (Cleveland-Innes, Campbell, 2012; Charoenpith, Ohkura, 2013).

In section 3.4., I discussed Crook's (2002) cultural approach to learning. UOC tried to create an attractive cultural environment for flexible (anywhere, anytime, at the students own pace) learning through the web by taking into account psychological elements, which are important while learning. Specifically, UOC incorporated in its strategy the four important psychological elements identified by Crook (2002, p. 114), seen as important for effective learning: time, space, community and materials.

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[98]   www.powertochange.com/students/people/meeting people (June 14, 2013); www.counseling.txstate.edu (Texas State University) (June 14, 2013)

Time. Asynchronous learning suited UOC student customers very well, given their preoccupation with other aspects of their life, such as work.

Space. The design of the virtual campus on the web features the important administrative and teaching and learning functions of a real campus (referred to in section 5.5.2.). The virtual campus provides most academic and non-academic services available on a physical university campus. UOC was able to create a new learning space, 'the campus on the web' without neglecting other learning spaces, such as the regional support centres where a variety of extra-academic activities takes place (referred to in section 5.5.1.). Through the web campus, instructions can be given and documents and other information can be made available. Interactive communication takes place. Collaboration or social learning can be carried out by participating in community forums for discussing topics of common interest. Multimedia are integrated. Students can construct their own knowledge by using web possibilities for generating learning resources. Aggregation of data and services from different sources has become possible. Sharing learning spaces with the community of learners becomes possible. Students appreciate the efforts undertaken in creating their learning environment.

Community. UOC acknowledged the importance of the community feeling. As mentioned in section 6.4.2., their guidelines for designing engaging e-learning environments include the community issue (making options to communicate and participate, visible and easily accessible). ICT learning and teaching does not have to be a wholly individual experience anymore if one looks at the communities of practice on the web and the current possibilities offered by recent developments of web 2.0 (internet as an interactive medium; social network sites) and the social cultural models of learning on the web. Learning communities arise through academic programmes, but also through social, extra-curricular and cultural activities. The learning community leads to a community of learning, which shares ideas and values and some other activities (Garrido, 2003). Nunez Masteo's (2004) research about sociability at UOC's virtual forum confirms that the use of metaphors in the electronic communication arena enabled the students to understand what the Internet means. Markham (2003) mentions three metaphors categories that reflect the reality of internet. Metaphor categories such as: internet as a tool (eg hammers, pencils), Internet as place (e.g. the information highway) or internet as a way of being ("users who have integrated internet technologies into their lives to a high degree"), shape our

conceptualizations of internet (Markham, 2003, p. 10). Internet as a place or a space comprises a socio-cultural milieu, in which meaningful human interaction occurs (Markham, 2003, pp. 6-7).

In a 2009 testimonial on the UOC website, a student expressed the possibilities for interaction as follows:

> *"What surprised me was that I interacted even more with people than when I studied elsewhere. The students interacted more with each other than at a traditional university."[99]*

In the literature four types of interaction in education are cited: learner-content, learner-learner, learner-instructor and learner-interface. While the first three forms can be found in traditional classrooms, the fourth, which is important in web-based courses, can be absent in traditional classrooms. The interactions between learners and between learners and instructors can be more intensive because the electronic medium seems to be effective for dialogue. Some students, who do not talk in face-to-face classroom discussions, talk more in online discussions, because they enjoy the attention from their instructors and their peers. Students who interact more in a web based course perceive higher levels of learning. Collaborative group interaction helps in learning the course content and eases the feeling of loneliness (Thurmond, Wambach, 2004).

Interaction with the instructors is important but depends more on the frequency and the personalized contact than on the face-to-face factor. Timely 'quality' feedback is necessary to overcome the sense of being disconnected because of geographical separation. It is also necessary in order for students to maintain their own pace and schedule. Students perceive more interaction if their course grade depends to some extent on participation. There is also a relationship between the frequency of interaction and their level of perceived learning (Thurmond, Wambach, 2004).

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[99]   Ester Fernandez Matali, Student, Catalan Language and Literature.
     http://www.uoc.edu/portal/english/estudis/testemonials/testemonials/index.html retrieved from the web 09/23/2009

Materials. In the early years, the design of the syllabus and related learning materials was an important task for UOC. It is now being replaced by the concept of 'the learning itinerary', based on the possibilities of web 2.0 technologies, which allow the use of open courseware (mentioned in section 6.4.3.). UOC's approach also shows that distributed education, in which teacher and student are in separate locations and learning takes place through ICTs independent from time and place, can be more than an informational process as seen in a technical process-oriented view. In such a process-oriented view, interactive and interrelated activities take place which transform input elements to output elements. By adding value to the input elements (information), a process of knowledge construction takes place. The process of knowledge construction is more complex than simply bundling, sending and receiving a package of information as a commodity (Markham, 2003).

A new paradigm of a university?

While trying to fulfil the needs of the knowledge society, UOC is also trying to preserve a liberal university education (in the sense of education as a (world) citizen based on higher values) by integrating all aspects of a "university of culture" (Readings, 1996) into its virtual campus concept. It is not an elitist form of liberal education, nor a technical form of merely ICT delivered course materials, but a new type of liberal education trying to create a community which transcends the boundaries of time, space, class, gender and nation. As mentioned by Rector Tubella in one of her presentations (Tubella, 2008):

> *"Teaching and management teams, are designed to strengthen the UOC community and complete the transformation of our organisation into a university network: our university is born on the Internet, online and open to people, cultures and ideas".*

This university is obvious not alone in experimenting with teaching and management teams. Team-taught courses have become important in many programmes at other campus-based universities such as the example of Stanford University shows (Leavitt, 2006). Leavitt argues that team teaching has many pedagogical and intellectual advantages such as: boosting an interactive learning environment, providing teachers with a way of thinking across disciplines, inspire new ideas and intellectual partnerships among faculty members. She claims that this collaborative teaching environment leads to a more active student role in the learning process. However, this type of team teaching is different from the teaching and management teams at UOC. UOC's teams could be compared to the course teams at UK Open

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University. The Institute of Educational Technology (IET) at the UK Open University (mentioned in section 5.2.) is a major example of an institution, which from its beginnings (1970), focused on the learning of the student. IET worked with course teams on course design and teaching methods to support students and it played a pioneering role in the design, content and delivery of open and online distance education. It offered a Master Programme in online and distance education since 1997 supported by online tutors on the basis of materials developed by academics at IET (www.open.ac.uk). Several other examples can be found but this is out of scope of this research and different from UOC. UOC adopted the upfront coherent strategy (decided by the first Rector) to build their university through the internet. UOC tried to create a socio-cultural environment on the web (a place where meaningful human interaction takes place), offering an attractive alternative to the traditional bricks-and-mortar learning environments. UOC took advantage of the potential to span time and space and also of the possibilities for students in remote areas and countries around the world to access materials and to obtain an excellent higher education. A student expressed this as follows:

> *"The UOC does not only serve as a continuous learning and study space. It is more than that. It is a meeting point, for dialogue, for tolerance. It is where we learn a little more each day, not only on the materials that we are studying, but also on people and on ourselves, on our capacity, discipline, responsibility, how to coexist with others, how to work in teams…".* [100]

UOC also considers itself to be a "real university". UOC was eager to fulfil all the quality requirements for traditional universities. They became a member of the European University Association, whose members are the more traditional universities. I perceive this as a recognition of their aspirations. During my interview with the Vice-Rector for postgraduate studies in January 2009, he mentioned that:

> *"UOC has a better relationship with the face-to-face universities rather than with other distance universities."*

This might be because UOC is part of the Catalan University System in which it plays a specific role as discussed in the next section 7.4 under the heading 'Feature six' but also

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[100] Margarita Alvarez Montes Canal, Graduate, Labour Sciences Consultancy Manager, http://www.uoc.edu/portal/english/estudis/testimonials/testimonials/index.html retrieved from the web on 09/23/2009

because of the developments with regard to changes in spaces for education taking place at many HEIs (discussed at the end of this paragraph). Student centred learning could easily be improved in this new environment where continuous assessment (explained in sections 5.5.1. and 6.4.3.) was already introduced. Continuous assessment is an excellent way to improve the quality of the learning process and monitor students' progress since this is now to be measured through ECTS credits (on the basis of workload) and learning outcomes. This type of assessment makes it possible to give the necessary support and guidance during the learning process and creates more opportunities to improve the student performance. Virtual learning creates possibilities for gradually reaching the learning outcomes as does a physical campus. This is why the connection between the virtual and the physical campus or the integration of the campus in the virtual environment becomes important. Providers of distributed education, such as UOC, understood from the beginning that a campus setting gives support to the education process and they created this campus environment on the web (Cornford, Pollock, 2003). During my interview in January 2009 with the Vice-Rector for postgraduate studies and continuing education, he said:

> *"Important are the learning outcomes and not on line /on campus. It is a cultural or a generational problem".*

Thus, UOC has demonstrated an alternative approach for on campus university education and learning. This university is not alone in trying out other approaches to university education and learning. Many examples of practice can be found in the UK and other European countries similar to those practices advocated in this thesis. In their project on European Virtual Campuses, Bastiaens and Schreurs (2009) conclude that there is no common understanding about the term 'virtual campus' or 'virtual university' in European countries. Countries use different names for similar activities. Terms as e-learning, distance learning, blended learning and open learning are used to refer to smaller projects in the field of e-learning. They mention that in the context of the European Commission, the term 'virtual campus' requires that several HEIs cooperate in the field of e-learning by developing joint curricula. According to them, in the UK, the University of Lincoln, the University of London External System, Oxford Brookes University and the Robert Gordon University use the term 'virtual campus' in important locations on their web sites. Other universities in the UK use the term when describing their operations such as the Campus One virtual campus (University of Ulster). Several high-profile universities, carrying out e-learning activities, do not use the term 'virtual university' (e.g. Sheffield Hallam University). In Belgium, the term was used for

individual projects by HEIs and companies. The University of Leuven used the term 'multi campus' when describing its virtual campus activities. In France, the term was rather linked to the business world; a bridge to link the employee and course offerings. It is out of the scope of this study to further elaborate on how, any others are approaching alternative approaches to campus education and learning (based on Bastiaens, Schreurs, 2009)**.**

In section 3.4., I discussed the role of the (physical) campus. Although the campus is still symbolically important, learners currently combine various spaces and environments when carrying out their learning activities. UOC, as a university with a virtual campus, should be seen as part of the development of new mobilities (different kinds of social spaces) for teaching and learning, which is also taking place in traditional HEIs going into online education. What is special about UOC is that they had an upfront coherent strategy related to technology, instead of a portfolio of activities based on technology.

7.4.   How can UOC address the increasing needs of universities and the pressures with which they are confronted? Key features of UOC's change processes. (RQ 3 and RQ 5)

In figure 1, chapter 3 (Pressures on contemporary academia), I did not mention the importance of change processes going on in universities. It became clear during my second research period at UOC, that the pressures on academia also had a strong influence on UOC and that change processes played an important role in their development. This illustrates how change can take place, often at the bottom of the institution and not at the institutional level, as noted in section 1.1. and 2.1, when I discussed obstacles to change in traditional HEIs.

As a newcomer in the higher education sector, UOC could implement its student-centred learning strategy, combining such key success factors as: clear vision and strategy, a reinvented relationship with the government (a public-private partnership), an adapted organisational model (private management practices adapted in an appropriate way), an embedded technological model, a specific pedagogical model, an effective network organisation and a strong leader with a highly motivated team.

Hereafter I will mention seven features, deducted from studying the UOC case:

Feature one: Technology serves teaching and learning

In chapter 3, I discussed the complex issues that arise when introducing ICT for teaching and learning. In chapter 5 and 6, I reported how UOC's success was achieved by believing in their virtual pedagogical model and by improving its different aspects and embedding it firmly in a teaching philosophy supported by adapted learning technology. The virtual campus provides a virtual learning environment and also contains all the administrative functions (e.g. marketing, financial systems) available on a campus. The system is based on open source software, which allows for flexibility because the system can be customised to fit user requirements. Research on technology developments for online learning ensures a continuous development of the virtual learning environment. Staff and leadership are strongly committed to online learning (based on chapter 5 and 6).

Feature two: Reorganising the multiple tasks of the professors

In sections 2.4.4. and 2.4.5., I discussed the changing role of the professor and its implications, a consequence of their complex and multiple tasks. In chapter 5 and 6, I reported on UOC's approach to organising academic work, how it has been implemented and how it is being improved on a regular basis. The complex and multiple tasks of professors have been unbundled and organised in a different way than in most traditional universities. External partners (tutors, counsellors) participate in the activities in different ways. A support system for the rather limited amount of full time academic staff involved in organising the teaching has been organised. The organisation of delivering learning services and the organisation of research activities through the IN3 institute (and other research centres) are separate entities within this network organisation (see chapter 5 and 6). However, it appears from sections 6.4.4. and 6.4.5. that more links between the two activities are promoted. This issue is further discussed in feature three.

Feature three: A research model based on a focused strategy

In section 2.3.2., I discussed the external factors influencing research and the different meanings of "research" in the knowledge society. At UOC, research, was already clearly part of the mission from early on, even during my first research period. Why does a newcomer university with an excellent model for learning services also want to carry out research? UOC wanted to do this because they wanted to be accepted as a "real university". However, as a newcomer, UOC has been trying to develop a specific research model by concentrating its resources on specific domains. The focus of IN3 is on ICT and its relationship with specific

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disciplinary fields and its influence on society (section 5.7). A traditional value has been respected and organised according to a focused research strategy.

The emphasis on teaching and learning had an impact on academics trained in their disciplines and made them worry about their research as discussed in sections 5.7. and 6.4.5. UOC addressed this problem by making sure that every UOC professor would be in a position to carry out research. A focused research model has emerged which allows every academic to participate in research. I mentioned in chapter six that it is not clear to me, what the extent of research amongst UOC professors is (what kind of research and how much research?) and how it is organised.

The pedagogical model is being improved by open and guided innovation, and by research on teaching and learning and technological developments in this field. Specific research centres have been set up (chapter 6). The eLearnCenter for research, innovation and training works according to a network research model. Collaboration takes place between individual researchers, groups of researchers and professionals inside and outside UOC (elearn Centre Activities Report 2012). These networks should be able to produce new forms of knowledge by networking online. According to Castells, the Head of IN3 and a member of the European Research Council (ERC), the ERC is calling for this type of knowledge networks in different European cities, universities and companies. He states that research is more advanced than teaching in collaboration technology[101].

Feature four: capacity for change

In section 1.1., I emphasized the need for adapted organizational models for universities when integrating ICT into its mission. Table 10, chapter 6, summarizes the significant changes, which took place at UOC since my first research period. Hereafter, I elaborate on one aspect of the changes with regard to their organizational model. UOC's organisational model has been adapted to meet the changing needs of the institution. UOC adopted a transversal model, which recognizes the needs of the academics (figure 6, chapter 6). Despite an out-of-balance power structure at the end of the tenure of the first Rector, with a model of central management fully dependent on the administration, they were willing to give more

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[101]   See also www.openscholarship.org : providing advice and guidance on opening up scholarship and research.

independence to the senior academic management team. Many academics also felt constrained by the organisation, as I indicated in chapter 5.

In the next phase of the UOC development, the university structure was made less dependent on central administration. The organisational structure was decentralised at the very top of the hierarchy by creating executive Vice-Rectors teams with a staff (figure 6, chapter 6). The concerns of academics were being taken into account by allowing them to combine the coordination of tasks related to teaching with carrying out research.The UOC leadership tried to integrate the personal goals of the UOC professors with regard to research within the organisational model by allowing them to spend 30 % of their time on research and by giving them more administrative support (mentioned in section 6.4.5.).

UOC became part of several networks with the aim of collaborating or exchanging knowledge with regard to academic and technological issues and improving its capacity for change (section 6.3. restructuring of the university network).

Feature five: Importance of leadership

New leaders bring new ideas. Different stages in the development of an organisation require adapted leadership styles, suitable for a new situation. In section 3.2., I indicated that it is necessary for university leaders to understand what technology can or can not deliver.

Both UOC Rectors had a profile and a leadership style (reported in sections 5.3. and 6.2.1.), which was close to the desired profile for Vice Chancellors (VCs) described in the leadership report published by the Leadership Foundation for Higher Education (UK) in August 2008 (Breakwell and Tytherleigh, 2008). The report (Breakwell and Tytherleigh, 2008, p. 4) states that VCs (Rectors) are "expected to combine academic credibility with all other competences expected of the leaders of any large commercial businesses that have political significance". Business related characteristics include being financially aware; managerial/leadership characteristics including internal leadership and effective external promotional and ambassadorial skills and; personal characteristics such as self-confidence, enthusiasm for their institution, good communication skills, flexibility and having the intellectual and physical stamina to keep going (Breakwell and Tytherleigh, 2008, pp. 1-4). According to the report, these profiles are not easy to find.

The first Rector had an entrepreneurial background and experience as a former Rector in a more traditional setting. Some observers (Senges, 2007, p. 215) claim that the first leader had

"a patriarchal and authoritative style". Based on my interview with the first Rector in December 2002, I rather observed, that he had an entrepreneurial style, based on his previous entrepreneurial activities and his experience with endless compromising in traditional universities (see sections 5.3 and 6.3). His style may have conflicted with some faculty members used to a more traditional setting, who were asked to play a non-traditional role at UOC.

My research and Senges' (2007) suggest that some issues arising out of the public/private status of the university, and its wish to be able to have a more company-like structure and organisation to be able to use private management practices, were not well accepted by some academics. How to explain the struggle for a workers council (Senges, 2007)? The demands in 2009 for civil servant status indicated that despite the structural changes introduced by Rector Tubella, some members of the staff still wanted to safeguard their rights with regard to a protected status (based on my interview notes 2009). Many academic staff members of UOC did not understand the original aim of the first Rector wanting to combine effective decision making with governmental support (section 5.3. a public-private construct).

Could it be that, as suggested by Senges (2007), the more authoritarian style of the Rector and his General Manager, have proved to be a distraction and have given a negative image to the more company-like structure which was set up? My research indicated that, towards the end of the first Rector's term in office, the UOC faculty increasingly had to deal with a General Manager who was unsettling the power balance between the managerial dimension and the academic dimension. It has been suggested that, in the vacuum left at the end of the term of the first Rector (about the circumstances, Senges, 2007, pp. 207, 215) the General Manager took the opportunity to enlarge his sphere of influence. In his previous life, he had been a member of the administration in a traditional higher education institution. Did he fall in to the trap of insufficiently involving the different parts of the organisation in decision making? Or was he caught in the confusion about the early model in transition? However, since I did not interview him directly (mainly due to language problems since he did not master the English language), either the first time in December 2002 or the second time of my interviews in 2009 (he had left the institution), I can only try to give an interpretation based on my limited information about him and my observations during my interviews.

UOC managed the transition from entrepreneurial leadership towards new leadership rather well. It is probably fair to say that the entrepreneurialism of the first Rector had been

necessary in the first phase of the UOC project. The second Rector has a more open management style. She managed to put the emphasis more on traditional university values (quality of teaching, research and service to society), while, at the same time, updating the 21st century aspects of the institution (updated technology, open innovation, open courseware and networks relevant to their core processes). She understood that, for UOC, it had become very important to be considered as a "real university", able to offer a quality education.

Dr. M. Cleveland-Innes, Associate Professor at the Centre for Distance Education at Athabasca University (Canada) worked at UOC as a researcher on the topic of leadership in January 2008. She studied which leadership styles are working in organisations such as UOC. In an interview with Ruffini (2008), she states that the leadership in institutions, which have a unique educational mandate, has to redefine relationships with traditional institutions and continuously remind the government of the uniqueness of their model in order to be considered in the policy decisions of the government (Ruffini, 2008). This means that the leadership of such an institution needs to be able to handle the political context well.

Feature six: the importance of developing a brand (a specific profile)

UOC developed its own brand of a "real university" despite the influence of isomorphic processes, which were trying to make it more like other HEIs (processes discussed in section 2.1.). It tried to integrate regulations and requirements at the European, the Spanish and the Catalan level. This means that it had to follow the rules and regulations applied to universities in general and at the same time introduce innovations related to e-learning for which no clear rules existed. The organisational flexibility, which existed in the capacity to integrate expectations of different stakeholders made it possible for UOC to rapidly reorganise itself. It enabled UOC to work with different networks to reach these goals.

Following up on the expectations of different stakeholders, included, going through the evaluation and accreditation processes available to the universities (Catalan quality agency, Spanish quality agency, European University Association), although these were not really adapted to innovative e-learning, and being accredited. An accredited teaching and learning process, including material of good quality, became important for their brand status.

From the beginning, UOC also attracted students, who wanted to expand their career opportunities or succeed in new careers. [102]. For this reason, it was also important that UOC degrees were to be considered high quality, which was not always the opinion of external people (see section 6.4.2. interview of EUA representatives with UOC students during UOC evaluation). In order to improve the brand status, it also became very important to increase their research capacity through the appointment of more professors with a PhD and making their explicit focus on a specific area of research clear in order to be considered as "real university", which is taking up research as part of its mission (mentioned in section 6.2.1.).

This whole improvement effort made them an equal partner, first among Catalan universities (Rector Tubella was chair of the Catalan Rectors Conference in 2009-2010) and also among the European Universities. According to the White paper on the University of Catalonia (2008), UOC and the other Catalan universities have to establish synergies within the local university system by taking advantage of the complementarities in the system. UOC has to share its experience in virtual teaching and learning with the other Catalan universities. The universities in Catalonia are fighting against the dropping out phenomenon (see section 5.1. between 30 % and 50 %)[103] and the lack of motivation of students. The Catalan universities need to become familiar with methods, which are improving the quality and the efficiency of learning. UOC has a contribution to make in this domain. According to the 2008 White paper, the promotion of joint qualifications, combining face-to-face and distance learning methods should be promoted. The White paper (2008) states that such qualifications could stimulate innovation in teaching, attract more part-time students and optimise resources. The Association of Catalan Public Universities wants to use the plan for the University of Catalonia, outlined in the White paper, as a point of reference for university systems in Southern Europe, because of the unique and complementary profile of each of the HEIs,

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[102]   Christensen and Raynor (2003, p58) give the example of the online Concord School of Law, founded by Kaplan, a unit of the Washington Post, which attracted primarily non traditional students. Graduates can take the California Bar exam due to the schools accreditation. The success rate of the graduates is comparable to many other law schools. Many students enrol, however, not to become lawyers but to understand law for succeeding in other careers.

[103]   See footnote 28: "La contribucion de las universidades espanolas al desarrollo", Fundacion Conocimiento y Desarrollo (CYD) mentioned in Asenjo, M. "La universidad acumula una tasa de abandono de hasta el 50 por ciento" in ABC, April 4, 2009. (" The contribution of Spanish universities to regional development" in: "The universities have a drop out rate close to 50 %")

which are part of its association[104]. It partly explains why, during my interviews, I was told that they relate better to traditional universities than with other distance universities (see section 7. 3. A new paradigm of a university?).

Feature seven: strong support from the Catalan government

In section 1.1.3., I discussed how universities encounter a changing relationship with the government and have to comply with accountability requirements. A public-private partnership (including political support and financial support), allowing organisational flexibility (run with private management techniques) at UOC, made it possible to act swiftly, for instance in case a new programme needed to be set up as a response to a societal demand (e.g. the programme for the unemployed). A public-private partnership facilitated this approach since the government was essentially interested in the final results (the performance indicators mentioned in the programme contract).

This partnership suited both Rectors well. In her *demarche* to the Catalan Parliament (in June 2009; see section 6.2.2.), the second Rector pleaded for the conservation of this flexible status.

The third part of the mission of a university, its outreach to society, has been strongly developed at UOC and seems to be a condition for support from the Catalan government.

Indeed, sustainable support is crucial. During my interviews in January and May 2009, the Vice Rector for Post Graduate studies, claimed that UOC had sufficient financial means (30% coming from the government, 70% from their own activities, including masters, continuing education and work with companies) to support their activities.

UOC may show traditional universities how the relationship with the national (regional) government can be reoriented (see section 1.1.2. and 1.1.3. , the relationship with the government) without losing the ties with Catalan culture and while becoming part of a global network. UOC has also sought to build a global university by developing its global campus on the web[105]. This illustrates findings, such as those by Robins and Webster (2002, p 3), who state that the virtual university is more than a "futuroligical and technological" phenomenon

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[104]   www.uoc.edu/opencms_portal2/opencms/EN/sala-de_premsa/actualitat/noticies/list.html?resultsPerPage=50&displayPages=10&currentPage=6 (21 June 2013)

[105]   http://www.theglobalonlineuniversity.uoc.edu

and that this type of university has to be understood in the context of the broader economic, social and political changes in the HE sector. They refer to the work of Readings (1996), who states that the university as a "national institution" is "in crisis". Readings (1996) explains the development of the modern university as a manifestation of the modern state. According to him, the modern university played a role in the cultural integration project of the state. Readings (1996), argues that the national identity of the university is "in ruins" given the developments due to globalization and that the relationship between nation state, national culture and higher education is breaking down.

However, UOC, has made an attempt to reorientate the relationship between state, culture and higher education. UOC seems to have made a social contract with the government and with society, and shows signs of corporate social responsibility in the field of education in its own region and also globally. UOC was able to cater to the needs of the local government by setting up courses for unemployed people due to the economic crisis, which is hitting Spain in a particularly hard way (section 5.1). In section 6.2.2., I stated that it remains to be seen whether UOC can claim to be like the other public universities and, at the same time, ask for flexibility with different rules applied to them. It seems that new exploratory projects - such as new programmes answering to societal needs - which UOC is taking on, require flexibility with different rules applied to them and to be run more like a private company, which for example, may have to pay flexible salaries to people they need to fulfil specific tasks.

7.5.   Change model based on experience at UOC (RQ 1)

On the basis of my findings, I conclude that pressures related to internal factors (focus on student, general use of ICT, flexible organisational model) and external factors (needs of the knowledge society for lifelong learning, external regulation, public-private partnership, technological developments) contributed to the changes at UOC.
UOC succeeded in its change process (see key changes in UOC over research period, table 10, chapter 6) because:

- The conduct of research and quality in teaching and learning, discussed in chapter 2, are related to "real universities" (with a research mission aiming at a leading national and international academic position and a societal mission such as supporting the Catalan identity) and have been supported by the leadership.

- The need for pedagogical and technological innovation (discussed in section 2.4.4.) through research led to the creation of a centre for e-learning research and further development of the Office for Learning Technologies.

- The changes in student demands and expectations, regional and international and international government regulations (discussed in section 2.4.4.) were taken into account.

- The relationship with the Catalan government was maintained (importance of relationship with the government discussed in sections 1.1.2., 1.1.3. and 2.3.2.). The government (regardless of the party in control) continued its support for UOC even during difficult economic circumstances.

- The change in leadership (leadership discussed in sections 1.1.2., 3.2., 5.3., 6.2.1.) brought a new emphasis in the development of the organisation by responding to these internal and external challenges. The institution was therefore able to organise the necessary support (reorganisation of work processes, adaptation of the technological infrastructure and of the organisational model) to make it all work.

Several of my initial constructs, about the internal and external strategic forces having an influence on the developments of UOC (indicated in section 3.7. Conclusions and issues for a research agenda), can be recognized in these conclusions. Table 11, chapter 7 below, summarises these initial constructs, which can be confirmed after a more profound case analysis and comparison of the case data of the second research period with the data from the first research period. The evidence for these constructs has been indicated in the summary of initial constructs (Table 11, chapter 7) and can be found in previous chapters 5 and 6. I made a few modifications to the initial constructs:

- With regard to the first construct, I modified the importance of business interests since, during the second research period, it turned out that this aspect was hindering the development of UOC towards a "real university".

- With regard to the second construct, I added the importance of a pedagogical model for qualitative e-learning.

- With regard to the fourth construct (roles for ICT), I added the importance of implementation and organization according to the strategic direction chosen. If

technology is an important element of the strategy, it is necessary to follow up on technological developments.

Table 11, Chapter 7: Summary of initial constructs

- Forces from the knowledge society with an impact on the strategic direction of the case studied are:

  o societal demands to address global issues (UOC Campus for peace, UOC global network)

  o demands for interdisciplinarity (UOC chose to do research related to ICT and its implications for knowledge and society)

  o demands for partnerships for economic benefits (UOC strongly related to the regional development of Catalonia)

  o the importance of business interests (during first research period several companies were related to UOC, this aspect turned out to be a hindrance in becoming a "real university")

- Tension and the delicate balance between destructive and constructive tension between core values of HEIs also play a role in the case studied:

  A focus on teaching and learning (first priority at UOC)

  o changing pedagogical principles (student-centred concepts at UOC)

  o labour market pressures (many students at UOC want to change careers or improve their possibilities)

  o changing student concept (lifelong learning at UOC, see age of the students)

  o Importance of a pedagogical model

  A professor centered view with a focus on research

  o professors have a need to be involved in research (UOC professors involved in management tasks want to do research)

  o specialisation and the disciplines (a research department at UOC develops early on and focuses on interdisciplinarity, specialized centres with regard to elearning, and

technological developments arise)

- Pressures for performance also exist in the case studied:

  o Bologna reforms: UOC had to comply with the Bologna reforms shortly after its start.

  o Assessments (The Bologna reforms made it necessary for UOC to comply with the requirements of the Catalan Quality Agency)

  o Rankings (The ranking for research published on the web, became important for UOC)

- Roles for ICT are prominent from the case studied

  o Online learning: UOC is a virtual university.

  o Widening access: Opportunities created by UOC.

  o Role of campus: At UOC, learning through a virtual campus becomes also a community experience and not only an individual learning experience.

  o Restructuring academia: At UOC, organisational roles have been rethought, unbundling of the role of the professors, importance of support structures at UOC, network idea.

  o Embedded technology strategy: At UOC, implementation and organisation according to the strategic direction chosen (based on ICT) turned out to be crucial.

Source: De Jonghe (2013)

The change model can be presented as follows (see Figure 7, Chapter 7)

Figure 8, Chapter 7: Change Model based on experience at UOC

Internal factors

- Focus on student and its teaching and learning needs
- General use of ICT
- Flexible organisational model

External factors

- Lifelong learning needs
- External regulation
- Public-Private partnership
- Technological developments

Factors contributing to success or failure

- Improvement of the pedagogical model (open innovation)
- Quality in teaching and learning (research on learning)
- Recognition of the need for research

Successful change

- Reorganisation of the infra structure and the work processes to create the necessary support for all the different aspects of the mission
- Adaptation of the organisational model

Source: De Jonghe (2013)

Initially, as indicated in chapter 4.4.5., I wanted to build a theory (hypotheses) on the basis of comparing data and constructs until the marginal improvement became small. Having discussed the distinctive features, qualities and lessons from change processes of UOC as an innovative newcomer, I now go back to examine what established universities might learn from the UOC experience and achievements.

8.   What traditional universities can learn (RQ 6)

Currently, UOC is not alone in introducing technology to enhance its teaching and learning mission. Many examples of practice can be found in the UK and other European countries, similar to those advocated as I illustrated in section 7.3 (a new paradigm of a university?). Indeed, all universities are confronted with the challenge of improving the quality of the learning process, a changing student body with a need for higher flexibility, the reduction of student drop out (mentioned in section 5.1; section 5.5.3.), competition for students and the need for the reduction of costs and the optimization of resources. Many HEIs are looking for benefits when exploiting e-learning for redirecting their own strategy and adapting their organisation.

What is special about UOC is that this university did have an upfront coherent strategy for integrating technology in its mission, instead of creating a bottom up portfolio of activities related to technology. It is a case of an embedded technology strategy implemented in the organization according to its strategic direction chosen.

- How can traditional universities benefit from UOC's experience and allow academics to deal with the complexity of their missions leading to their multiple tasks?

- How can traditional universities adapt to contemporary requirements of student centred learning, which is concerned with the individual learning experiences of the student?

In the remainder of this chapter, I will elaborate on what I believe other universities can learn and on some of the issues they have to consider when implementing these lessons in practice.

8.1.   Re-balancing the elements of a complex mission and re-defining organisational roles.

Plurality of missions is one of the aspects of complexity within traditional research universities: teaching, research and service to society. Teaching not only involves young students, but increasingly also more mature students, professionals and students wanting to study online. In addition, universities are carrying out different types of research (as indicated in sections 2 introduction, 2.3.2., 2.4.2.). Research can be government funded or can be contract-based research. The third mission of universities, service to society and industry, is another commitment that takes various forms and requires time and energy, according to the

Green Paper "Fostering and measuring the third mission in HE institutions" (European Commission, 2008). Professors, in principle, are in charge of carrying out all these complex missions.

On top of that, professors are confronted with demands for student-centred teaching and learning which brings about new tasks. The 2010 Trends Report of the European University Association (EUA, 2010) seems to suggest that there is still a long way to go before universities will shift to the new paradigm of student-centred learning. Student-centred learning, as intended by the Bologna reforms, cannot be introduced in an efficient and effective way if its features are being built on old frameworks. ECTS is based on student workload and not on teaching hours. New ways have to be found to create the circumstances in conventional universities favorable to introducing student-centred teaching and learning.

The recent report (2013) to the European Commission on "Improving the quality of teaching and learning in Europe's HEIs", puts forward recommendations for improving the quality of teaching (High Level Group on the modernisation of higher education, 2013). The report also states that learning has to be put centre stage because research has often overshadowed teaching and learning. The next report of the High Level Group, to be published in June 2014, will be about new methods of delivering quality education, which will enable people to access higher education from their homes.

While these observations describe the key aspects of the challenges conventional universities are facing when trying to introduce changes in teaching and learning, it may also be seen as an example of the search for solutions within the old model and of what I mean by the implementation of "new features in the old framework" or new wine in old bottles. As shown by the UOC experience, the complex processes involved in carrying out all these tasks can be facilitated by collaborating with people with specific expertise in aspects of these processes, inside and outside the organisation. Networks, involving other universities and companies with expertise in the field of learning and learning technology, share their knowledge with UOC, as the evidence presented in section 6.4.1. (the benefits of open and guided innovation), shows. Given the current organisational circumstances in many conventional universities, it is difficult for one person to be individually in charge of the learning process of the student. Is there a need for a further split between learning, teaching and research to respond to the societal demand for putting the learning of the student at the centre, as I discussed in section

2.5.? This split is already having an impact on the organisational model of many traditional universities.

I will argue that processes of teaching and research will have to be rethought in order to be organised in a more innovative way. Unbundling of academic activities makes this possible by breaking them into separate activities, which can be carried out by different individuals or groups. Unbundling should not be proposed as an easy solution. It is rather the tension between the teaching and the research function which needs to be examined.

8.1.1. Unbundling of multiple academic activities at the institutional level

At the institutional level, unbundling has already been taking place in traditional universities. Structures for research and teaching have often been set up separately as I mentioned in sections 2.2 and 2.5., referring to Barnett (2003, p. 149), who observes that different forces and interests have made research and teaching separate functions within the university.

In the traditional model, many adaptations have been made to accommodate research, especially in the sciences. (Inter-) University Research Laboratories and Research Institutes have been set up. National and international virtual networks have been created. Projects with external companies are being undertaken. Spin-offs have been created. Parallel structures for research and consulting have been set up. These initiatives contribute to the third mission of universities. These adaptations have made research in the sciences somewhat more of a collaborative project, but still professor-driven. As far as research in the humanities and social sciences is concerned, such adaptations and accommodations have been less evident.

However, these initiatives – though successful – have mostly left the organizational model of HEIs intact, with regard to the organization of one of its core process, teaching (see sections 1.1, 2.1, 2.2, and 3.3). 'Unbundling' implies that, at the institutional level, the relationship between research and teaching has to be redefined and reorganised. If this reorganisation is not possible, institutions have to adapt their mission. Various options exist, such as concentrating on teaching and focusing research on specific topics, possibly in network relationships, or variations on these options. Universities trying to make improvements have found it rather difficult to succeed at innovation in research at the same time as innovation in teaching (High Level Group on modernisation of higher education, 2013). Indeed, Clark (1998, p. 6) explains that academic departments based on disciplinary fields of knowledge, protect their own domain and are not able to carry out all the tasks that are currently expected from a university (see also section 2.3.1. about the developments within different disciplines).

Clark (1998, p. 6) also observed that entrepreneurial universities set up a "new periphery of non-traditional units" (e.g. knowledge transfer, industrial contact, continuing education, interdisciplinary research centres), which were more willing to cope with societal demands than traditional academic departments. This explains why, for specific initiatives, separate companies (dual mode places fit in here and executive education initiatives) have been set up in order to avoid resistance to change. According to Boys (2008, p. 11), The University of California, Berkeley Conference (2001) on "University Teaching as e-business", concluded that in many places, the most successful provision of e-learning has been carried out through a separate facility, as an autonomous in-house entity, a partnership or as a new entity. Boys (2008, p.11) claims that this is done mainly because, in this way, the difficulties with assumptions of academic autonomy and control could be avoided.

These separate units in universities could be managed by a tightly linked executive team which should be able to manage innovation and integrate them in the structure when appropriate. Integration in the structure may become a key problem. Successful companies separate new exploratory units from exploitive traditional units. A tightly linked executive team manages the organisational separation. This type of company is called 'the ambidextrous organisation" (O'Reilly, Tushman, 2004).

However, separate structures may be barriers to change because it may not be able to change the old culture in other parts of the university and integrate innovations. Dual mode initiatives, as mentioned before (sections 3.4, 3.5.) are an illustration of these barriers. The recent (premature) success of MOOCs, free-of-charge, university online courses, also at traditional universities, is another illustration of the difficulties for traditional universities to change their teaching and learning concept. This type of courses delivered through ICT is not necessarily designed in an innovative and student-centred way but can have traditional learning approaches, which do not necessarely enhance the learner experience (Gaebel, 2013). The formal quality mechanisms to assess the quality of the MOOCs in terms of design and delivery are not yet in place (Conole, 2013).

Boys (2008, p. 11) suggests that universities could learn from private sector practices with regard to rethinking organisational roles and institutional processes to really integrate e-learning. Hereafter, I argue that, in order to strengthen organisational coherence, it would also be necessary to examine if unbundling of academic activities at the individual level would be a solution. This seems controversial and it is happening already as discussed in the next section.

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8.1.2. Unbundling of multiple academic activities at the individual level

At the individual level, professors in traditional institutions are still mostly supposed to deliver both research and teaching, as well as administrative duties and service to society, sometimes nearly simultaneously, which is particularly burdensome in the disciplines where little or no teamwork exists.

Thus, a tension is felt at the level of the individual faculty member, who is supposed to perform these multiple roles. In fact, if the roles and expectations of the professor are not clearly modified, a demand for a change in teaching methods (from professor-centred to student-centred), may actually increase, rather than alleviate, the already very strong pressures and tensions. Individuals, especially when teaching is concerned, should not be responsible for the entire production process and the delivery of the teaching/learning service.

Is it essential for every academic to carry out research if a commitment to student-focused learning exists? The decision to engage in research depends on the way that the individual academic sees his or her role, career prospects, and expectations of the employer. For effective student learning and for the delivery of learning services, it is not essential, as the UOC case illustrates. Finkelstein's (2010) observation that since two generations there exists, a practice in the USA of hiring teaching professors to do the teaching and other staff to monitor the learning of the student, is also an indication in this direction. For example, Finkelstein (2009, 2010) notes that in the USA, academic work and careers are being restructured (changes in types of appointments, work and career tracks) and that the academic profession is already changing.

Finkelstein (2010) expects similar developments in Europe and Asia over the next 10 to 20 years. Kehm and Teichler (2013) observe that the academic profession in Europe also faces new tasks and challenges. Many academics come to the profession later in life. The majority are performing essentially teaching jobs (Finkelstein, 2009, 2010). However, teaching done by teachers, who are not carrying out research themselves, can be informed by research or can be research led teaching and learning (see chapter 2, introduction and section 2.4.3.).

For individual academics, a redefinition of academic work will have to take place, a new division of labour to carry out the different aspects of very part of the mission of universities. In sections 2., introduction and 2.5., I pointed out that teaching and research have become separate parts of the mission of the university, because the research function has become important in the knowledge society, which encourages knowledge production. Barnett (2003)

argues that teaching and research have become rival ideologies rather than aspects of the complex mission of universities. Each part of the mission (teaching or research) is taken on with such a commitment that, for those actors (faculty members), it becomes a significant part of their life. It plays a part in constructing their professional profile (Barnett, 2003). Choices with regard to a professional profile imply that the academic has clarified his or her own values, ethics and purposes and depend also on his perceptions of criteria for career progression. How do they see their academic identity? Where do they feel they can contribute? Professional identity is an ongoing process based on context and experiences (Clarke et al., 2013).

Johnstone (2002, p.17) argues that the structures in conventional universities do not work in order to support individuals wanting to use ICTs because the effective and efficient use of ICT requires additional organisational roles. Johnstone (2002) asserts that traditional faculty roles will have to shift and that more professionals will have to work on the teaching and learning process in higher education (as at UOC, employing instructional designers, teaching collaborators). This will influence the status (decision to focus on teaching) and the costs (investments in qualitative e-learning) of the institution.

Virtual networks provide possibilities for sharing expertise in virtual teaching and this can strengthen organisational coherence because sharing of expertise is based on teamwork. This model of unbundling within the teaching mission could be a solution for many traditional universities. If professors involved in organising teaching and learning would be supported by administrative staff to organise the teaching, they may well have some time left to undertake research activities.

In the case of UOC, I saw that instructional designers and specialists in learning technologies perform important functions in the organisation and delivery of the learning process. I also discovered that institutionally research was focused on the study of ICT and its development, and the use of ICT methods by persons and organisations in order to understand the economic, social and political transformations they bring about. For academics involved in organising teaching, carrying out research (mostly ICT pedagogical research related to their subject/discipline) was made possible by enhancing the support system.

This different way of organising traditional academic activities may be difficult to adopt because of the resistance to change, more specifically from the disciplines, which have their

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own characteristics and practices as I discussed in section 2.3.1. I elaborate on this issue in appendix 11.

8.1.3. Relationship with students; students at the centre

According to Boys (2008, p. 14), "academics have multiple individual goals and may be overloaded or under-resourced, potentially forced into limited or distracted relationships with students". With respect to teaching and degree cycles, the European students' union (2009) states in a report (ESU, 2009, p. 81), that "today (2009) students still face a rather superficial adaptation of degrees, curricula, teaching and assessment methods". At the 2009 Copenhagen, Institutional Evaluation Programme seminar, organised by the European University Association, student representatives involved in the Bologna reforms mentioned the lack of initiative in universities and the huge resistance to change with regard to the implementation of the reforms (De Jonghe, 2009). The recent report of the EU high level group (2013, pp. 40-41) recommends that students should be "part of the team", designing and delivering curricula based on new methods of teaching and learning. Rethinking roles in academia based on integration of ICT, should lead to different student/ staff relationships that are more flexible and adaptive (Boys, 2008, p. 14).

De Long (1997- 8, p.15) observes that professors carry out research and teach job-oriented undergraduates who need to be marketable to employers and that, occasionally, some students will go for an academic career. He states that for the university, preparing students for a job, is about a service to society, consisting in recruiting and retaining students; for those on the inside, the professoriate, "it is a self-sustaining, self-contained world". The objectives of the model of the professiorate are based on the "inwardly centred cycles of subject discipline" (illustrated by the fragmentation of disciplines into sub disciplines) and academic specialism (institutionalised by the creation of separate, autonomous departments of research).

Asking the professoriate to adapt their teaching, for instance, through e-learning will create reactions against consumerist practices (discussed in sections 2.4.2. and 3.2), such as packaging knowledge and selling it as a commodity. Fear exists for the application of managerial efficieny and effectiveness to teaching and learning because it will pervade faculty prerogatives and limit the freedom to teach and to learn (Greenberg, 2004, p. 3).

As long as new concepts of teaching and learning are (superficially) implemented within in old frameworks, there will be confusion, dissatisfaction and disillusionment among students (ESU, 2009). Students will be more demanding and be perceived by some as consumers.

Molesworth and Nixon (2009), when reporting on their frustrated aspirations in setting up an open, informal online learning space, argued that students will stay as consumers, instead of producers of knowledge, unless the learning architecture, "the roles on the stage," changes, and unless that both staff and students are disconnected from their familiar roles.

Greenberg (2004) argues that some academics do not see that there is a difference between the substance of teaching, learning and research, and the more efficient and effective way that the processes of these activities can be organised. According to Greenberg (2004), the substance of teaching, learning and research is protected by academic freedom and professional standards. The practices and customs related to processes of carrying out teaching, learning and research do not need that same protection. Managerial practices with respect to the reorganisation of processes are often related to business and commercial purposes and seen as a danger to university standards (EUA, 2009)[106].

As the UOC case shows, technology can be used for realising a different way of operating a university. Technology makes it possible to transform traditional approaches of carrying out the different aspects of the mission. In particular, intelligent use of technology can enhance teaching, learning and research strategies. UOC organised teaching and learning in a cooperative way and by promoting collaborative learning on the web. I will elaborate on this hereafter.

8.2. Enhancing all aspects of the mission by technology

When asked what traditional universities should do and what it means to use e-learning strategically Bates, a professor at UOC (2003-2006), reacted as follows (Segarra, 2004)[107]:

> *"I would like to see e-learning focused on the areas where it brings the most benefit. It should be used strategically and not as a tool that everybody uses.*

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[106]   Even as recently as mentioned in the European University Association newsletter 17/2009, Report on the Autumn Conference: Concerns were also raised …… about the danger of a growing commercialisation and "Mac-Donaldisation of higher education" and that transnational higher education should not only be about "business opportunities and entrepreneurial risk".

[107]   Segarra, D. (2004). Interview with Tony Bates, Professor at the Universitat Oberta de Catalunya: "E-learning should be used strategically and not just as a tool that everybody uses", 30 December 2004. http://www.elearningeuropa.info/directory/index.php?doc_id=5943&doclng=6&page=... (September 21, 2009)

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We should realize that e-learning is expensive and time consuming for the professor, particularly at the beginning."

This sounds like the old way of utilising ICT. Bates does not refer to new ways of working in a team to prepare teaching and learning nor to a possible re-thinking of the pedagogical model enabled by up-to-date ICT. He continues:

"It could mean using e-learning for new markets, like the lifelong learning market, which will pay for itself in the end. Or it could mean also using it for specific pedagogical purposes in certain subjects. Statistics, for instance is an area where students have many problems and you can ... with graphics, video or animations ... help the teaching."

Rethinking of the organisation roles and elements of an HEI's mission would require a reconfiguration, not only of the faculty and department roles (as discussed in 8.3.1), but also of the resources and support services. This could be a big hurdle for most traditional (and less traditional) institutions as I have seen from the difficulties encountered in many universities when implementing ICT in their administration. As the UOC case also illustrates, effective integration of ICT in teaching and learning requires a rethinking of the pedagogical model and an adapted organisational model if learners are to receive the full benefits available.

If committed teachers in the traditional universities do not benefit from a better support system, they will not be able to alter their traditional role and answer to demands for different teaching methods. Boys (2008, p. 10) noted that adding high quality web content to support traditional teaching, which happens in some HEIs, remains a contradiction when combined with scarce resources and an autonomous instructor-led organisational context. This is not a workable business model in the long run. If a course is not used many times, it can become expensive and does not guarantee quality.

It will be difficult to expect individuals to carry out both research and teaching in the face of continually increasing standards. Design of good courseware with support from instructional designers and learning technology specialists, and the involvement of teaching collaborators to participate in the teaching and coaching, are necessary. UOC added support staff in order to enable academics to set up a teaching process with integration of content providers, designers of the course material and teaching collaborators.

Fully integrating ICT and follow-up on the latest ICT developments can lead to more fundamental change, as the UOC shows. How far can traditional HEIs go? Institutions have to

decide which challenges they wish to prioritize. The requirements of the Bologna transformation, with its focus on student centred learning, the demands of the knowledge society and the employment needs of the students, all require action. Universities have accepted the challenge of also attending to the needs of the lifelong learners, which requires more than using ICT as an operational tool.

Developing material adapted for e-learning is not just an issue of using the right technology. The cost of developing learning materials on the web is high. Traditional institutions have content providers in-house. To start with, they could also benefit from sharing this content with others within their own universities (within their own subject area or across subject areas). Through better links with the private sector at the forefront of ICT, they could learn from companies that are competent in learning technologies (such as the companies advising virtual universities like UOC, who have expertise in learning techologies and pedagogy). The concept of open innovation can be worked out for universities. Adhering to the open courseware movement would reduce costs. Through extended intra- and inter-institutional collaboration, HEIs would benefit from shared knowledge, wich would compensate for the potential loss of intellectual property rights and competitive advantage, especially in a dynamic context of knowledge creation.

The model of change put forward by the Massachusetts Institute of Technology (MIT, 1990; Scott Morton, 1991)[108] can be used to define the levels in the use of technologies and their impact on customer focus, organisational integration and system rationalisation. It consists of five phases of change through ICT: Stage 1 is an evolutionary stage containing a phase of "localised use of ICT" followed by a phase of "internal integration" of the use of ICT. Stage 2 is a revolutionary stage consisting of three phases: "business process redesign, business network redesign and business scope redefinition.

The National Council for Educational Technology (NCET, UK, now Becta[109]) adapted the model to the use of ICT in education (Boys, 2006, p. 20). It added an additional stage but retained five phases and changed their names as is indicated in Figure 9, Chapter 8 below.

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[108]   The generic model, which can be applied to any ICT architecture, was based on a large research programme, involving several research projects and research staff. The use of ICT in several business organisations was examined (Boys, 2006, p 19).

[109]   Becta promotes the use of technology throughout learning.

Figure 9, Chapter 8: MIT 90s model of levels of technological change adapted for education
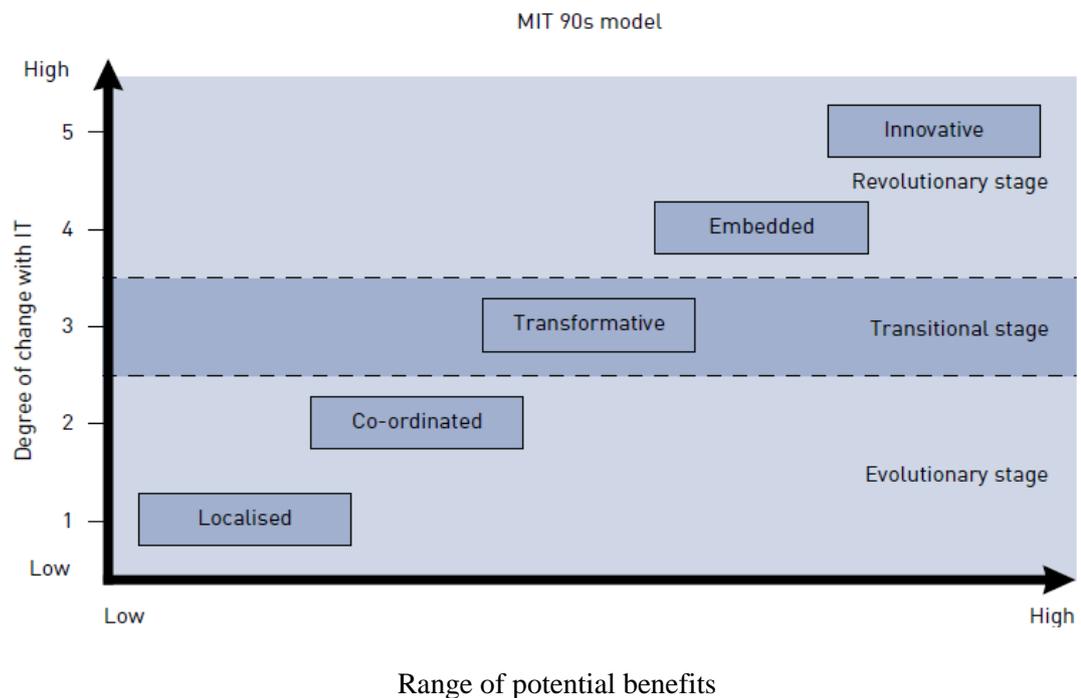
Source: adapted for education by Becta from Scott Morton (1991)

The model was discussed in some studies[110] and used by some institutions in the UK to benchmark e-learning.[111] The transitional stage, which contains the transformative phase, is more adapted to the education sector. This approach could be applied to traditional universities in order to assess if they are already benefitting from the transformative power of ICT. Indeed, the model assumes that, the more ICT transforms an organisation (by transforming the processes), the more it will benefit from it.

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[110]   E.g.: Studies by JISC and by DfES on adoption and maturity with regard to e-learning

[111]   E.g.: University of Strathclyde http://elearning.heacademy.ac.uk/wiki/index.php/MIT90s (16 September 2010). For the history and the relevance of the model see also: Bacsich, P. (2006).The relevance of the MIT 90s framework to benchmarking e-learning. http://elearning.heacademy.ac.uk/weblogs/benchmarking/wp-content/uploads/2006/09/MIT90s-survey-20060925.doc

8.3. Some conditions for success

The following requirements, which are based on the evidence from my case study are necessary, but in themselves are not sufficient because they have to be part of a well defined overall strategy. Several of these requirements can be found in the recommendations following the report about improving the quality of teaching and learning in HEIs of the EU High Level Group (2013).

8.3.1. A willingness to question the organisational model

An organisational culture of change is needed to exploit the potential benefits of ICT use. The combination of ICT and organisational change has been studied in companies. The concept of open innovation, as I described in chapter 6.4.1., should be implemented by universities for teaching and learning, not only in research. Universities funded with public money have a particular responsibility here. The following actions are recommended on the basis of the insights gained in my case study:

With regard to the external reorganisation:

- A switch of the focus of the university to students and to society in general. UOC's approach is instructive. Its involvement with society can be seen in its arrangement (training of 30,000 unemployed people) with the Catalan unemployment service and in the establishment of the campus for peace.

- More attention to the benefits of "Open innovation". This includes outsourcing (unbundling) and networking, as I have seen in my case study for all aspects of the mission, not only in the domain of research or for administrative purposes.

With regard to the internal reorganisation

- Adjustments in the delivery processes of the core activities (especially course design, delivery and assessment). The UOC case indicates that this is an important factor in convincing faculty to embrace change. It gives them also the possibility to spend time on research.
- Staff development aimed at specific skills and abilities required for successful implementation of new roles. My case study shows that soft skills (such as co-operation, problem solving, learning abilities, communication skills, teamwork and

decision making) are also necessary if ICT is to be exploited fully (Castillo-Merino, Sjöberg, 2008).

- Appropriate career management systems and employee involvement schemes. From the evidence of UOC, it follows that this is a process which should grow and gradually be improved. UOC's new training programme for teaching collaborators is one illustration of this process. Staff development for teachers should be better organised. At UOC, special training was being organised for people involved in the process of organising teaching and learning on the web.

- Incentives and rewards for all intellectual achievement to recognize all aspects of the diversified mission of the institution and reduce confusion and ambiguity about faculty roles and priorities (chapters 5 and 6). UOC worked out solutions for teachers wanting to carry out research. In section 6.4.4., I indicated that, according to the annual report 2008-2009, new faculty policies were introduced. The position of joint lecturer has been created. A new faculty induction and mentoring process was defined. Sabbatical years can be granted. The academic dedication of the faculty will be measured. The assessment methodology of the research activities of the faculty was also specified.

8.3.2. A willingness to question the basic pedagogical model

In many other aspects (e.g. governance), it has been difficult to radically alter the organisational model of traditional higher education institutions. The consequent implementation of Bologna, together with forces for change in society, will compel universities to rethink their pedagogical model and become truly student-centred. The following actions are recommended:

- Standard work arrangements should be evaluated. My case study shows how, for instance, the teaching function can be rearranged by making it a collaborative effort with respect to student support.

- Traditional teacher-student relationships may be questioned. My case study indicated how tutors and counsellors intervene in the teaching and learning process.

- Teaching methods should be reorganised (lectures in classrooms should be the exception). The possibilities of using new methodologies on the web, which increased with web 2.0 technology, have been considered in chapters 5 and 6.

- Professorial control over the curriculum should become team work. When teaching and learning becomes a collaborative effort, as shown in my case study, the professor organising the course stays responsible, but the teaching and learning experience enhances due to the collaborative effort.

8.3.3. A mandate from national or regional governments as a way to overcome or bypass the blockage in established universities

As I indicated above (chapter seven, feature seven), public-private partnerships to support and finance (aspects of) ICT based teaching and learning, should be sought. In the UOC case, the regional government was very much involved in the development of the new institution. UOC realized the importance of the transformative power of ICT and the development of collaborative communities. The government wanted to support the development of this virtual university as the employability of their knowledge workers at all levels is very important. Together with the regional network of Catalan universities, a common strategy was developed which also supported e-learning.

Instead of focusing on autonomy with respect to the government (which becomes difficult anyway because of today's increased pressures for accountability), it would be more efficient and effective to focus on private-public partnerships for the common good. This would include, for universities, the possibility to use more private management methods.

8.3.4. A willingness to act on it

As the UOC case illustrates, the specific profile and adapted leadership styles of the Rectors have been important for the development of UOC. Contemporary universities need leaders who are prepared to take the necessary strategic decisions and have the capacity to implement the required organisational change.

9.   Conclusions

9.1.   Overview of the thesis. The network scenario realized?

Overview

In Chapter 1, I discussed the need for new organizational models for universities confronted with a changing relationship with the government and changing needs in the education market. I indicated that universities are facing this challenge amidst many other demands put on them. I continued in Chapter 2 with presenting the discourse on the long-established values of traditional universities and their cultural and historical baggage. A professor-centred view and a focus on research are causing significant tension with a focus on learning in which the relationship with the student is central. In Chapter 3, I discussed potential roles for ICT. New technologies are not yet fully exploited and in general ICT is merely seen as a tool to support the teaching experience while it has potential to transform the teaching model and the organisational model at large.

In Chapter 4, I discussed my research methods and focused on the case method as a valuable research method to develop deep insights, which could eventually lead to building an emerging theory. In Chapter 5, I introduced Spain and the Spanish university system, before presenting the case of the Universidad Oberta de Catalunya (UOC), a virtual university and a newcomer in the higher education sector in its initial years of existence. In Chapter 6, I indicated how the dynamics in this institution changed over the period 2002-2009.

In Chapter 7, I indicated to what extent UOC was different. The model for delivering learning services to students is most interesting. Organising the learning of the student becomes teamwork. Through an external network of teaching collaborators, regular interaction with the students can be organised. The students are not just treated as customers, as they are also participants in their own learning, requiring a serious commitment from their side. For the students, taking responsibility for their own knowledge construction and participating in collaborative learning became fully possible after UOC updated its technology and introduced the possibilities of web 2.0. For research, a specific model and a focus on ICT and the study fields offered at UOC has been established. In chapter 7.4, I also indicated why UOC could address increasing needs and pressures for change.

In Chapter 8, I drew some potentially useful lessons for traditional higher education institutions which are not fully exploiting ICT for teaching and learning although the content

provision may be available in-house. Based on the evidence from my case study, I also pointed out some requirements for success. The external and internal organisation needs to be adapted and the pedagogical model needs to be developed. Directives from the government may be required to motivate other institutions. Many HEIs have become large complex organisations dependent on the state for funding, research grants and student aid. Governments expect accountability for funds spent. They want students to be served, learning outcomes achieved and quality research to be produced. They expect students to graduate, to find jobs and they want to see public benefits from their public investments. Higher education is a key player in the global competition. Political forces and regulatory control lead to demands for more efficiency and clear results in higher education, considered as a public utility. These demands will require different organizational structures focused on the individual student.

The network scenario realized at UOC?

The concept of open innovation, improving collaboration between universities and other organisations by sharing knowledge (all the sources of ideas) in order to be able to explore all the possibilities, is now crucial for the development of UOC (section 6.4.1.). They developed a specific model of partnership with the region of Catalonia and with enterprises without merchandising their education. Their model offers new opportunities for enhancing employability.

I contend that, through "open innovation", the pedagogical and the technological UOC model will further evolve. The new approach to organising academic work will also be further improved.

I indicated that, for research, many questions remain open for UOC for which there are no definitive answers yet:

- What are the implications when research is needed as an input for teaching?

- To what extent can professors involved in the teaching also carry out their own research in fields which are not of interest to IN3 (research centre at UOC) but are important for input in the teaching and learning of the students?

- Can research be delivered by somebody of IN3 at the request of the academic organising the teaching if it is related to an IN3 subject?

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- Is IN3 giving an input for a study field/programme/subject offered as a programme at UOC but not related to the subjects researched at UOC (with focus on ICT)?

- If not, do they work with outsiders on subjects, which are not researched at IN3? There are indications that outside knowledge producers are still involved.

Most of these questions refer to the challenge of integrating research, innovation and teaching. At UOC, these departments report to different Vice Rectors. Integration requires more reflection on the on the meaning of research-based teaching and the link with innovation. Another challenge remains to transfer the output from UOC's research and innovation activities to the part time teaching collaborators in order for them to integrate this output into teaching practices. These challenges are confirmed in The Game Changers Online Learning Series (Contact North, 2012), which is an online series of Ontario's (Canada) distance education and training network. I will also watch the development of faculty policy as well as the development of the organisational model with its delicate power balance, as indicated in chapter six.

For the leadership, new stages in the development of the 'network' university may require a new leadership style. UOC integrated the regulations and requirements at the European, the Spanish and the Catalan level in order to improve its brand status as a "real university" that could deliver quality teaching and learning as well as research. This effort ensured the continuing support of the Catalan government which is important for the sustainability of the UOC model.

Currently, Catalonia is fighting against high student drop-out rates and a lack of student motivation. It is compelled to use different methods of knowledge dissemination to cater for new segments of demand. According to the White Paper on the University of Catalonia (2008), UOC is an important partner in the Catalonian university system and contributes its experience in distance teaching to the system. Synergies among Catalan universities are encouraged and should lead to the avoidance of inefficiencies such as the development of virtual campuses by all the universities in the system. This raises the question of how far collaboration between Catalan Universities in this system will go: are Rectors from more traditional Catalan universities willing to collaborate in such a system?

In chapter 7 (feature 6), I discussed the specific profile of UOC that has been encouraged by the White Paper on the University of Catalonia (2008). From this Paper, I learn that participation from face-to-face universities in UOC - by voice or vote in decision-making

bodies - may be considered and joint qualifications are to be considered. One might wonder how this relationship will develop in view of some difficulties that have already appeared at the Masters level in one course that UOC organises with other universities (as expressed by the Vice-Rector for Postgraduate Studies during my interviews in 2009).

These examples indicate the power and control issues that can arise between network members. I would like to make a reference to the CHEPS scenarios, I discussed in chapter one. The second scenario (CHEPS, 2004, pp. 23-34) is the one mostly resembling the UOC model. It presented the idea of a university which functions in a network as the main way of coordinating within as well as between institutions, their other providers and the consumers.

9.2.   My contribution to knowledge

My thesis is intended to be both a contribution to theoretical knowledge and also to the dissemination of informed practice.

My analysis of the case study, comparing two different periods in time, illustrates the complex processes that institutions are facing when integrating technology. It is not just a question of buying a learning management system. Adaptation to technology implies an understanding of the central teaching and learning function, the benefits of technology in this domain and the impact on the organisation of the university.

My research is relevant for answering key questions faced by HEI Presidents or Rectors. The questions below need to be addressed if senior management want to prepare their institutions for the existing challenges. My research looks at the answers from a newcomer's perspective and draws possible lessons for established institutions. Hereafter I mention some of the questions and summarise some of the key elements relevant to both the answers and possible lessons together with references to the sections in my thesis.

- How to deal with the growing student numbers and class rooms where individual contact becomes practically impossible?

  In section 1.1.1., I observe that a new approach is necessary to deal with increased student numbers in order to make an undergraduate education possible for them.

  I also indicate that ICT will reinvent or supplement the core technology of higher education.

In section 2.4.2., I mentioned proposals for new university models, which imply the use of digital delivery of educational services.

In section 3.3., I highlight the role of technology and the need for digital literacy, which has also an impact on the strategy of traditional HEIs.

- How to organise teaching and learning while having resources cut?

  At the end of chapter 2, I state that given the concern for knowledge acquisition and dissemination, intelligent investment and use of ICT is an obvious topic of inquiry, with attendant implications for organisational and working practices.

  In section 3.6., I explain that cost cutting ranks only tenth among the drivers for online learning. The emphasis is now on the potential pedagogical gains and the positive impact on the student learning experience.

- How to implement student centred learning?

  In section 2.4.4., I elaborate on the development of a student-centred approach, implying an ongoing process, allowing for individual study paths adapted to the needs of the learners and the requirement of an appropriate organisational response in order to integrate this teaching and learning approach.

- What are the implications and/ or the potential of implementing ICT in teaching and learning for the pedagogical model?

  In section 3.1., I indicate that ICT affects the teaching-learning process: the nature of the faculty role, the student-faculty relationship and the course or the class room.

  In section 6.4.3., I discuss the importance of the interdependence between technology and the associated pedagogical model.

- What else is needed beyond the provision of a learning management system?

  In section 3, 1, I indicate that the blind adaptation of an ICT driven process re-engineering, without an adequate strategic vision and commitment from the entire organisation, risks only compromising the quality of students' learning because of the lack of an underlying pedagogical strategy.

- How can a learning management system contribute to student centred learning?

  In section 3.3., I explain that e-learning makes it possible to construct knowledge and to participate in collaborative learning. In section 6.4.3., I point out that teacher support and development are very important in an online environment. In section 5.5.3., I describe the central position of the student and their relationship with tutors and counsellors.

- How to use the enormous amount of content available in universities?

  In section 3.6., I indicate that web-based curriculum development is relatively expensive. "Economies of scope", are the cost savings which result from sharing of inputs, including knowledge, across the processes used in the production of different, but related, product lines. At traditional universities, the knowledge produced by academic staff can be shared and used in different channels of educational provision.

- How can MOOCs best be developed and what is their contribution to the pedagogical and organisational model?

  In section 3.6., I argue that the exploitation of economies of scope offers the possibility for face-to-face, blended and online course programmes to support each other, through sharing knowledge, pedagogical innovation and the repeated use of course materials.

  In section 8.1.2., I mention that in the case of UOC, instructional designers and specialists in learning technologies perform important functions in the organisation and delivery of the learning process.

  In section 8.2., I mention I explain how traditional HEIs could use their in-house content providers.

- How to motivate teachers?

  In section 2.4.5., I discuss the changing role of the professor and its implications. Most professors have been trained for research and have limited knowledge about new ideas on student learning processes. I highlight the importance of teacher training and support. In section 3.6., I explain the importance of the right attitude towards using ICT, which require two types of competences, teaching skills and media literacy.

- Which adaptations are necessary in the organisational model?

  I chapters 5 and 6, I illustrated that the case I studied went through substantial change processes in its organisational model (see also figure 8, chapter 7).

  In section 8.3.1, I recommended several actions with regard to the external (e.g. more attention to the benefits of open innovation) and internal organisation (e.g. staff development, incentives and rewards for all intellectual achievement), which could be useful for traditional HEIs when implementing ICT and online learning.

Besides my contribution to possible answers and lessons for other HEIs (see above), I also addressed the gap in knowledge, about technology as a substitute or a complementary platform to deliver courses, and the way ICT can really transform the business model and organisation of universities. I illustrated the effects of ICT deployment on the organisation over time because there is a lack of longitudinal studies on the subject. I illustrated that the issues discussed in the literature (the need for adapted organisational models, the values of independent scholarship, societal demands for teaching and learning, roles for ICT), are also a concern in this virtual university and have led to change processes in this university. I validated that the use of technology as a substitute or a complementary platform to deliver courses has strategic and organisational implications.

I put the new technologies in the context of much needed strategic change in traditional higher education and emphasized the fact that decisions have to be taken at the top level of the university and that a specific leadership profile, combining academic credibility with competences expected of leaders of large organisations, and an adapted leadership style, suitable for a new situation, are important to guide an organisation to the different stages of its development (section 7.4. feature five). I looked at what other institutions might learn from newcomers in the market.

To what extent can the findings of this study be relevant for other situations (transferability of my findings)? Erlandson et al. (1993) suggests that this is not possible as direct application given the specific context of every case. For Stake (1994) every case is unique but can be an example within a broader group. Therefore he does not reject transferability. Bassey (1981) and Lincoln and Guba (1986) put forward that practitioners may relate the findings to their own positions if they believe their situation to be similar to the study. Guba (1981) suggests,

that in order to facilitate transferability (in preference to external validity or generalisability), qualitative researchers should provide sufficient detail of the context of the fieldwork carried out for the case study. There is a disagreement on the nature and the extent of background information that should be offered, but Guba (1981) suggests that all the contextual factors related to the investigation should be fully described. Based on the case study data reported in chapters 5-7, the reader is likely to decide that the prevailing environment as depicted in my case study, may be similar to another situation with which he or she is familiar and that the findings can justifiably be relevant for the other setting.

I took my responsibility as investigator to ensure that sufficient contextual information about the fieldwork site was provided to enable the reader to allow such a transfer (see chapter 5 and 6). I indicated the boundaries of the study by describing the organisation (UOC) and its location (Catalonia), the restrictions in type of people who contributed data (section 4.4.3.; table 3, chapter 4), the number of participants involved in the field work, the data collection methods (table 4, chapter 4), the number and the length of the data collection sessions (section 4.4.3.), the time periods over which the data was collected (2002-2003 and 2008-2009) (Cole and Gardner, 1979). Transferability could be obstructed by the fact that UOC started from scratch with the implementation of a technology strategy and adapted its organisation accordingly. However, UOC also had to go through change processes. These processes will not be avoided at other HEIs trying to implement technology strategies in the organisation.

9.3. Future work

It will be interesting to observe how UOC will cope with the development of networks now that they no longer follow a strategy of setting up companies to deal with separate tasks. What does a network organisation mean for university management? A research group[112] within UOC will focus on management practices and work organisation in decentralized, market-mediated organisational forms. It is to be expected that some of the research findings can be useful for reflection on the functioning of universities as networks. Among the issues to be studied are: the relationships between members of (sub) networks and the organisation, the

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[112]   Research group: New Economy Observatory One (5)

http://in3.uoc.edu/index.php/in3web_eng/layout/set/print/phd/places_on_offer/new_eco last consulted 03/04/2009

power and control issues in networks, and the role of human resource practices in these organisations.

After going through this process and realising how much has already been done to stimulate the breakthrough of technology in universities[113], I would concentrate my further study on how the growing possibilities of the internet can have a further impact on the strategy for core processes in universities, more specifically on the teaching side, and how to go about provoking the cultural change with respect to putting the quality of teaching and learning in the centre of attention (cfr. EU High Level Group, 2013).

I intend to contribute towards methodology of using case study research for theory building, by continuing my study of UOC and developing new (mini) cases in order to refine the change model based on experiences at UOC. I also intend to pursue my attempt at theory building based on a specific analysis of the data, constructs, about the internal and external strategic forces influencing the developments of UOC (Eisenhardt, 1989).

9.4. Reflections on the future of higher education: towards disruptive change?

UOC has sought to integrate the values of traditional universities while adopting 21st century methods. It incorporated in its flexible organisation the values important for academics while also setting up an innovative support system. It seems to have managed to deal with the tensions caused by dualities (teaching/learning towards research), as often identified in the context of current management literature (Sanchez-Runde, Pettigrew, 2003).

This being said, UOC finds itself at a crossroads, confronted with different challenges coming from different actors in society. Every stakeholder wants something different out of UOC. The Catalan society would like an education for its population who did not have an earlier

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[113]   Dondi, Cl. and Moretti, M. (eds.) (2007). E-learning quality in European Universities: Different approaches for different purposes (UNIQUe) agreement number 2006-1425/001-001, with contribution of EFMD, EUROPACE, EFQUEL: mentions several projects carried out to support the integration of ICT in higher education.

chance. Employers would like UOC to train their workforce. The heterogeneous student population has specific needs and goals. UOC itself has ambitious goals: aspiring to be a "real university", positioning itself in the Ibero-American system and working globally.

UOC was working hard on keeping its innovative spirit observed in my two research periods. The pioneer from the 1990s went through a transformation phase very similar to a "sleeping innovator" (Senges, 2007) and seems to be prepared now to move well prepared for the future (Gartner, 2011).

In chapter 8, I explained how technology makes it possible to change and enhance the traditional model of universities and help them to become true partners in the knowledge society, more specifically in the field of improved forms of educational provision.

Attempts at "new managerialism" (Reed, Deem, 2002; chapter 3.2., referring to practices from the private sector being used in HEIs) have led to unhappy staff (Watson, 2009, pp. 46-83). Many forces are working against change. Professors in different disciplines do not always understand that reforms are not about undermining authority, but about rethinking institutional processes and organisational roles. The real challenge is how to provoke a cultural change about what new learning and teaching may mean for different disciplines, each with their own specific views.

Disrupting change is difficult to accept for academic staff still operating in an education system of the past century and seeing few rewards for trying to introduce such change. Some will refer to the old conflict of interest and say that this leads to an education for employment and not an education for life. The reality of the traditional university is all too often that education is seen as a breeding ground for the peer-reviewed publication race and for the few who could join the race.

Castells (2009) argues that universities at large have been the last organisations transformed by technology. Hybrid systems exist almost everywhere (electronic environments but no real transformation). He warns that "controlling the classroom" will not be possible. Currently, multi-modal interactive communication is possible. Virtual universities cannot offer the personal contact with the student, which remains the privilege of small groups of people in mostly liberal arts colleges, although even in liberal arts colleges online learning is being explored (Kolowich, 2012). However, virtual education can be interesting for a larger part of the population. Campus life can be attractive to 18 year olds who welcome the opportunities for face-to-face socialising available on a campus. The percentage of 18 to 24 year old

students coming to study with UOC is striking. They claim to be "bored to death" with current teaching methodologies and prefer a virtual environment (but also face-to-face parties!).

Castells (2009) argues that teaching should follow the path of research in collaborative technology. According to him, our economy needs a labour force that is able to reprogramme itself during our lives. Indeed, we change or will change professional activities several times during our life time. The university system should provide people with the mental capacity to retrieve information and re-combine it to have knowledge. Castells (2009) puts it as follows:

> *"You have to know what you are looking for. Your mind can be lost, not the information." (personal notes at the EADTU Annual Conference, Maastricht, 7-10 June 2009)*

Virtual education is fundamental for constant retraining of the labour force. It is a form of education that can be more easily combined with having a working and private life. In addition, in the developing world, there is a huge need for this type of higher education. Open access to educational resources and open research is also being promoted by the Association of African Universities (Barry, 2010). However, African universities still have problems with connectivity. Adequate and affordable access to bandwidth is necessary (Barry, 2010).

The UOC case shows that ethical values and public service have to be aimed for even in a virtual university. The UOC model shows the way for a "reinvention" of the public side of the university. It allows for the development of a strong public service side. Easy accessibility to ICT (including the "ENJOY guidelines", a work in progress for designing engaging e-learning environments; see section 6.4.2.) and openness towards the needs of the Catalan society, and even of the broader society including "campus for peace", are part of this offering. Issues of participation of people from non-traditional backgrounds (geographically, ethnically) are a key challenge to traditional universities and higher education in general. The new model is well suited to give an answer to these issues of participation and diversity. Students can take non-degree courses and start building their competences (Tordera, 2008)[114]. Supported by the Catalan government (department of employment) and FUOC, the

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[114]   Tordera S. (2008) "The decisive time": This report mentions the satisfaction of students who can enrol in individual courses at the UOC's "athenaeum" or take the entrance course for over 25 years old. www.uoc.edu/portal/english/la_universitat/sala_de_premsa/reportatges/2008/

foundation for UOC, UOC is training the unemployed for free[115]. Behind the public-private partnership is a strong social motivation.

It is, however, clear that access to ICT alone will not be enough to convince people to re-engage in learning, as already indicated in Selwyn and Gorard (2003). The UOC case shows how the external and internal organisations need to be adapted and how the technological and pedagogical model needs to be worked out. A system of tutors and counsellors is necessary to engage the student. The project mentioned above, for improving the skills and employability of the unemployed, shows that ICT skills are important, in spite of the suggestion of Selwyn and Gorard (2003) that employers would prefer other qualities first.

A mandate from the government can be a way to overcome the blockage which many universities are experiencing by not engaging fully in ICT for teaching and learning or leaving it to individual faculty members. This seems to be the case in the UK, where discussions about the necessity of enhancing the student experience with ICT have taken centre stage[116].

Many professors have been resisting the forces of technology. Unbundling the university will have repercussions. Professors will have to re-imagine or re-invent themselves. Traditional educators will criticize these developments (Giridharadas, 2009)[117]. However, the rapid changes in technology give a new meaning to generation gaps as is stated by Lee Rainie, Director of the Pew Research Centre's Internet and American life project[118].

Twenty to thirty years from now, the picture will be very different. New developments will come along. Traditional higher education institutions were built centuries ago on "communities of theology" and will now increasingly be built on "technological communities" (Castells, 2009).

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[115]　" The UOC to train up to 30, 000 unemployed people via monthly e-learning courses" (08/06/2009), news, UOC http:// campus for peace.org/portal/English/campus_pau/novetats/list.html (05/03/2010)

[116]　Comments made by Lammy D., Minister of state for higher education and intellectual property rights during Times Higher Education Pre-election debate, 24 February, 2010, News release 25 February 2010.

[117]　International Herald Tribune of 7/8 November 2009, Giridharadas A., "Putting the students in control"

[118]　International Herald Tribune January 12, 2010, Stone B., "Rapid changes in technology are giving new meaning to generation gap"

It is important for universities to respond to these new developments by embedding them fully in their strategies for all aspects of their mission, at the risk of being marginalized or surpassed by new and more flexible players, pioneers like UOC or other players from the corporate sector. As century-old companies are facing or have faced extinction by ignoring new trends and opportunities, universities will not be isolated from the challenge of fully exploiting the possibilities, offered via the new technologies and the new demands on them from their stakeholders and the society at large.

Appendix 1

Chapter 1.1: The CHEPS scenarios.

Three scenarios for higher education were presented by the Centre for Higher Education Policies and Strategies (CHEPS) of University of Twente (The Netherlands) (2004), on the occasion of their 20th birthday. The scenarios were based on a Delphi-survey. The survey was carried out in order to get a better idea about the opinion of higher education experts with regard to certain trends in higher education. The results of the two rounds of this survey were used as inputs for the scenarios (CHEPS, 2004, p. 5).

The first scenario (CHEPS, 2004, pp. 8-22) consisted of a world (in the year 2020) in which most universities and research centres remained public places of discovery and knowledge dissemination but in addition they were part of large (national) institutions cooperating on a regular basis under the guidance of the European Commission.

I briefly summarize features of this scenario, some of which some are already strongly encouraged by the Commission:

About students

- Declining student numbers due to demographic shifts from and despite growing demand from Southeast Asia, because of a restrictive visa policy (due to the terrorism risks in society)

- Equal access for all income classes and all EU member state citizens,

- Barriers for foreigners on the EU market: would only accept students who wanted to migrate permanently to carry out jobs for which a labour shortage existed.

- A participation rate of young people in higher education of over 60 %.

- A growth in mature students: lifelong learning becomes the standard in Europe's knowledge economy, until two to three years before retirement between 71 - 73 years.

- An EU Talent programme (the economy cannot afford to lose any talent).

- Public-Private partnerships: The private sector can give stipends to talented students.

- Access based on recognition of previously acquired competences has become important.

Structure, programmes and methods

- Mergers and single national multi-campus university ("super tanker universities").

- A standard structure (3+2+3) for Bachelor, Master and Doctorate levels.

- A uniform degree structure does not mean uniform higher education quality although the European accreditation agency tries to impose common standards.

- Universities would expand their study programmes to career seekers and to "third age" citizens.

- A Graduate Competence Test, determining the right to get a recognized degree.

- On-Campus and face-to-face teaching; Blended learning with a strong ICT component thanks to a Public European Subscription Network.

- Universities are free to set their own fees within limits set by the government.

Public good

- Public good character of education and basic research,

- Public good type research but also private R&D

The second scenario (CHEPS, 2004, pp. 23-34), which is the one mostly resembling the UOC model, presented the idea of a university which functions in a network as the main way of coordinating within as well as between institutions, their other providers and the consumers. Horizontal and vertical integration via the web is taking away the barriers between subsystems which previously performed different functions. The globalisation of the economy and the diverse life and career paths of individuals are part of these processes. Universities are part of this complex social system. Technology helps these universities in becoming "edgeless" (Bradwell, 2009, p 8) while developing links with each other and society.

Specific features of this scenario follow:

Experts and stakeholders

- Experts and stakeholders are involved and add to the legitimacy of these policy networks. It becomes difficult to see where authority and responsibility are located.

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Labour markets

- Labour markets and the forms of work are profoundly changed by network technologies.

- Information and social webs are constructed across companies and countries.

- Diplomas of graduates are the first step in validation of competences in the workplace.

- Generic competencies, social skills are important

Universities

- Successful universities use the traditional capacities of academic and scientific networks as well as inter-and intra-organisational networks based on reciprocity, trust and long-term commitment.

- The comprehensive university has a matrix structure, comprising public, semi-public and private entities for teaching, research and service. For example undergraduate teaching is integrated in the European Open University, providing online services. The dual mode approach (face-to-face combined with ICT) is also used. Science and technology research units are affiliated with research units of private industry.

- Universities bundle and unbundle their tasks in research, research and service, their (multi) disciplinary profile, their geographical outreach and their embeddedness in a web of shifting organizational configurations within and beyond the organization.

- Universities are diversified structurally and in terms of modes of study and courses provided.

- Academic leadership and institutional management differ according to specific organization profiles and context.

Students, learning communities and academics

- The student body has changed; more international students, part-timers and lifelong learners.

- Undergraduates gather their credentials cross-organisational and cross-national.

- ICT networks between universities and other knowledge providers mix face-to-face with online courses.

- Academics consider themselves cosmopolitan rather that European, networking in search for partners wherever knowledge is found.

Government

- Governments remain the most important sponsor of HEIs but public money comes now from heterogeneous sources (regional, national, European governmental entities and agencies) for different purposes.

The third scenario (CHEPS, 2004, pp. 37-51) consisted of a highly competitive and diversified higher education market with many non-traditional higher education providers, including private ones, responsive to the needs of a broad range of learners and different economic sectors. In this scenario terms like the university, the higher education sector, the market and the academic profession are no longer used. The field is diverse and markets drive most of what happens.

The relationship between markets, higher education and national and supra-national authorities is complex. Other characteristics are:

- Participation rates are over 70 % of the traditional age cohort but most growth has been in adult, mature or lifelong learners.

- Higher education programmes are offered more flexible by a wider set of institutions to a broader range of learners.

- Institutions have more autonomy in terms of student selection, programme development and curriculum content (most quality assurance and accreditation systems stepped back from programme level accreditation and licensing).

- Private providers and private funding has increased.

- Public teaching funding of HE programmes at public HEIs is based on targeted and competitive student enrolment at the undergraduate level. Post graduate programmes are funded through tuition.

- Concerns about declining standards in HE exists.

- Doubts rise about "super tanker" universities (after the big mergers) and small and specialized institutions become successful again.

- There seems to be a coherence problem in the HE sector

In my thesis several of the issues mentioned in the three scenarios will be discussed. It is striking that a changing student concept and the need to provide for lifelong learners comes back in every scenario. In the first scenario, called "The jolly old world" (CHEPS, 2004), the danger exists that Europe will become isolated, friendly (leisure, technology) but inward looking (difficult access for outsiders). In the third scenario, the danger for the disappearance of the university is the most apparent; the market takes over and HE becomes a diverse sector. The second scenario leaves room for the contemporary university to re-invent it self.

Appendix 2

Section 1.1.4: The Bologna reforms

In most European countries, general education has been assigned to secondary schools. Students at Higher Education level get an education in which the transmission of knowledge and the preparation for a professional career are important. Mass education methods are increasingly being used, such as lecturing of large groups in huge class room. Should we educate citizens through a liberal education (shaping the mind and the character of the individual) or should we follow a more utilitarian view, which caters to the needs of the labour market (e.g. employers, parents)?

Besides the problems discussed in chapter one caused by the massification of higher education (increased student numbers, more diverse students, changes in the nature of society and the structure of the economy, shifts in intellectual culture, new ways of knowledge production), it has been very difficult to recruit students from other European countries in the European labour market since governments and authorities did not understand degrees of competences of students from different European countries. Europe wants a greater comparability and compatibility in order to increase "employability". In addition new skills and competences are required in the labour market. Reorganisation of degrees, discussions about the content of programmes (curricula wars) because there is no university-wide agreement about what a student should study (Bloom, 1987 pp. 320, 339-40, 352; Duderstadt, 2000 pp. 75-76) and more extra-curricular activities (to educate the citizen and to learn skills for the labour market) are a consequence of this discussion.

Therefore, Europe is currently building a coherent and cohesive higher education area (EHEA), through the Bologna process reforms. As a consequence of the Bologna Declaration (1999), an initiative of the Ministers of Education from 29 countries (now extended to 49 countries[119]), every country has to structure its higher education sector according to the Bachelor-Master scheme (first and second cycle). Doctoral programmes were added later as a third cycle. In many universities, initiatives were taken to create doctoral schools. In 2008, the EUA established its Council for Doctoral Education (EUA-CDE) in order to respond to the

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[119]   www.ehea.info 7 July 2011

specific needs of the research universities, many of which are rethinking and reorganising their doctoral education. These universities will co-operate and exchange good practices.

Mobility and networking between universities is promoted. The Bologna process will lead to a revision of the curricula and will put more emphasis on social and professional competences demanded by employers. Teaching should become student centred and should be transformed from an input based approach to one based on learning outcomes.

The Bologna process wants to make the educational systems more comparable, compatible and coherent. In Europe, a diversity of national systems still exists. The EHEA will improve transparency between higher education systems and will facilitate recognition of degrees and academic qualifications. More than 5,600 higher education institutions and 31 million students fall within the scope of the Bologna process. The Bologna process puts significantly increased emphasis on flexibility for the student by adopting a flexible system, which allows the student to create his individual learning path, and on learning outcomes.

The main actors involved are the Education Ministers of the 49 Bologna countries; representatives of European universities, of professional higher education institutions, students and quality assurance agencies; and the Centre for Higher Education of the United National Educational, Scientific and Cultural Organisation (UNESCO). They meet regularly in the Bologna Follow Up Group, which also prepares the two year ministerial meetings. Since the Budapest-Vienna Ministerial Conference of March 2010, an EHEA exists, with three cycles, as well as a credit and term system instead of the old system of years of study.

The Bologna reform process has been seen by some (Mahamedbhai, 2005) [120] as inward looking (only focused on Europe) but it is meant to be outward looking. It is linked to international educational trends and, it has as a goal for Europe, it has to remain competitive in the global society. The Bologna process has also had some influence outside Europe (Academic Cooperation Association, Hamburg Conference October, 2004; Zgaga, 2006; Gordon, 2009).

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[120] e.g. Mahamedbhai,G. , President of the International Association of Universities, at the EUA Convention in Glasgow, April 2005

Appendix 3

Section 2.2.2: Societal demands, partnerships for economic benefits and commercial interest.

UOC has created research networks and alliances with research institutes and universities abroad. Creating virtual research communities, through Information and Communication Technologies (ICT), will become fundamental in order to include researchers and students from all over Europe and other continents. Virtual centres of excellence should be built as strong and durable partnerships between academic and industrial research teams (a role of the European Institute of Technology[121]). Opening access to knowledge through the better exploitation of ICT is crucial for progress.

In this appendix I will briefly describe the partnerships between regions, governments and higher education institutions, which developed in the USA immediately after WWII and which have intensified in Europe since the 1990's. These partnerships will be enhanced through the use of ICT.

A look at the USA

It is useful to have a look at the USA since they have played an important role in the developments of higher education in Europe and other parts of the world. I base my analysis partly on Duderstadt (2000), partly on other authors who are adding some interesting view points and partly on my own analysis.

After the cold war, the academic research structure in the USA was stimulated and well funded by the federal government, because they considered national security demands and domestic priorities, such as public health and economic prosperity, to be crucial. Science became "the endless frontier" after WWII (a term used by Vannevar Bush, Professor at MIT, in his 1945 report to the President). The Bush report set out the base structure of the government-university partnership (Boyer, 1990, p. 10; Duderstadt, 2000, pp. 110, 111,130).

The partnership between the Federal Government and the American research universities boosted the scientific prestige and performance of those universities. The basic research had

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[121] European Institute of Innovation and technology (EIT), Independent European Community body set up to address Europe's Innovation, established in April 2008.

an important impact on society. The applied research played an important role in health care, agriculture, national defence and economic development.

The system delivered well-trained scientists, engineers and other professionals. It laid the foundations for new industries, such as electronics and biotechnology.

More specialization led to an explosion of knowledge and to strong networks between peers in different universities. The substantial funding for applied science created a gap with the social sciences, natural sciences and humanities.

Duderstadt (2000, p. 5) states that, although the return on government investment in R&D is high, criticism (scepticism and even hostility) of research universities has been increasing in the USA. In an earlier article, Geiger (1993) already indicated that the government, some academics, the cultural left and the social responsibility movement are the originators of the critiques. According to Duderstadt (2000, pp. 113 - 115), among the challenges to the research partnership are the erosion of public support for science and cost shifting to parents and students, since the tuition fees commonly increase if governments set limits on indirect cost reimbursement.

The research partnership between the government and the research university has been important for the American research university, but has also had some negative impacts, such as fierce competition, loss of collegiality and community, and pressure on more institutions to adopt the culture and value system of the research university. External stakeholders have been left out when researchers have pursued their own projects instead of addressing the important social and economic problems.

The same developments have been taking place in Europe in a more intensive way for the past decade. The relationship between higher education and society is changing, as argued in the five papers prepared for the European Science foundation report, "Higher Education looking forward: relations between higher education and society" (2007). The papers address the needs of the knowledge society, the achievement of equity and social justice, the interconnections and the interdependencies between higher education and its communities, the steering and governance of higher education and the differentiation and diversity of institutional roles and professional roles. According to the report, which will be the basis for further research, a new social contract is necessary between higher education and society in order to resolve conflicting economic and social expectations.

A look at Europe[122]

Currently, Europe also recognises the importance of this partnership between the governments or regions and their universities. Although many of the developments in the USA after WWII also took place in various European countries, at a slower and more diversified pace, I have to mention a fairly recent development in Europe which shows a great preoccupation with research. I will hereafter focus on the European Research Area (ERA) that Europe is currently building.

Until today, research and innovation was still spread out over Europe. About 80 % of public sector research is conducted at the national level, mainly supported by national or regional (diverging) research programmes. This fragmentation at national level does not always lead to optimal results. Some progress has been made since the European Commission (EC) proposed at the Lisbon European Council in 2000 to create an ERA, to contribute to the creation of better framework conditions for research in Europe. There is still a long way to go. For the European Commission, the ERA is a cornerstone of the European knowledge society, which is defined as "a society where education, training and innovation are fully mobilised to fulfil the economic, social and environmental ambitions of the EU and the expectations of its citizens" (Green Paper ERA, 2007, p. 5).

Based on the key principles agreed on in 2000, a fully realised ERA (around 2020) should have the following features: an adequate flow of competent researchers (a single labour market for researchers), world-class research infrastructures, excellent research institutions, effective knowledge sharing, well-coordinated research programmes, well established research priorities and a wide opening of the ERA to the world (as mentioned in the Green Paper ERA, 2007). The following concerns should be built in all these features: research policy should be rooted in European society (scientific excellence, sustainable development, involvement of society in research agendas, and responsible scientific and technological progress within an ethical framework). The balance between competition (at world level) and cooperation (across Europe) should be pursued. The benefits of Europe's diversity, enriched by recent geographical enlargements, should be used.

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[122]   This paragraph is based on the green paper ERA (2007)

The Green Paper analyses the progress made in these areas and proposes initiatives for further progress in order to contribute even further to the renewed Lisbon strategy for growth and jobs. The Green Paper ERA consultation period, which took place from May 2007 until December 2007, was followed by a consultation report early in 2008 and five European Commission Communications.

Europe wants to become the most competitive economy in the world in which research has an important role to play (while at the same time keeping its social model). It should be organised and its "production" should be monitored. Higher education institutions will have to respond to this policy. They are involved in both the ERA and the European Higher Education Area (EHEA, see section 2.2.). They face growing funding and organisational challenges because many are (or want to be) a player in both areas.

More concentration and specialisation is necessary (European centres of excellence and networks of HEIs and public research organisations). This requires autonomy for institutions (in order to position themselves and their strategic choices), cooperation and competition at European and international levels, and a better link between their research activities and the needs of industry and society. Professional management of research and more transparent standards of accountability are also necessary.

Innovative public-private partnerships and a good balance between institutional and competitive funding (the European Research Council[123] will play a role here) are being promoted. Public funding should be linked to output and performance.

In order to evaluate the functioning of these partnerships, performance and output have been increasingly measured. Funding today often depends on the outcomes of such assessments.

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[123] European Research Council (ERC), Funding body set up to stimulate scientific excellence, officially established in February 2007

Appendix 4

Section 2.2.3: The consequences of research performance measurement

UOC organised its first international seminar on Higher Education Rankings and E-learning on September 22-23, 2011. One of the issues discussed was, why rankings do not include online education in their studies. Parameters to be used for ranking online universities were proposed. The organisation of this event proved the aspiration of UOC to be in a leading academic position within the international system.

In this section, I will describe the pressures for performance which resulted in the measurement "fad" and in the ranking "game". Measurement and ranking play an important role in emphasizing the importance of research. Hereafter, I briefly elaborate on the motives, the methodological issues and the ways necessary to improve the systems for research measurement. I also briefly indicate the motives, the impact and the alternatives for rankings, which are the result of this measurement movement.

Systems for research measurement:

I would like to elaborate on the assessment of research through measurement since, following on from the USA, Europe is now also becoming obsessed with evaluation, publication rates and citation indices. Most universities are preoccupied with showing governments and competitors and other stakeholders that they are active and productive in research. Measurement systems are set up to measure performance. In the UK, the research assessment exercise (RAE) became very important for evaluating research and for universities competing for the second stream of government funding. According to Henkel (1999) the system had a profound implication for the academic profession because it unsettled the existing relationships between individual academics, the discipline, the department and the institution.

The RAE has influenced the evaluation systems for research in many countries, although the forms of review vary considerably (David, 2008). In his study of methods of evaluating university research around the world, Abiorwerth (2005, p. 44) points out that other countries that followed the UK system, initially adopted methods with less powerful incentives or were designed to achieve lower costs. He gives the example of the Australian version of the RAE, introduced in the early 1990s, which relied initially on publication records because of the modified peer review system's cost. Roberts (2005) compares the UK and Australian models. Shewan and Coats (2006) discuss the content of a new research quality framework, inspired

by the RAE in the UK, to be introduced in Australia and suggest it will compromise clinical academic medicine.

Abiorwerth (2005, p. 46) indicates that following the Swedish model, Denmark introduced modified peer review in 1983, which involved a wider population than just scientists. A proposal to adopt the UK system was rejected in 1995. The Netherlands has had a system for evaluating research since 1993 based on an internal self evaluation every three years, which serves as preparation for an external evaluation every six years.

Motives

Among the complex motives for the RAE evaluation, Taylor (2006) identified the following, using the 1986 exercise as a starting point: accountability in the use of public funds; securing better value for money in public research expenditure; rewarding good performance; incentivising improved performance; and fostering the concentration of research in certain institutions. Based on later developments of the RAE, he identified further motives such as: improved institutional management, especially in research; improvements in the quantity and the quality of the research level; encouragement of competition between institutions, departments and individuals; an assessment culture; and the underpinning of restructuring with institutions. These motives are also valid for other countries.

Issues about Methods

Taylor (2006) identifies some key principles that should be recognized when evaluating research, such as transparency, credibility and simplicity. He also highlighted some key issues which play a role in the evaluation of research. For instance, compared with pure research, applied research seems to be undervalued in many evaluations. This can also be seen as a bias towards "mode 1" research against "mode 2" research.

Among the members of assessment teams, there is often a lack of representatives from the people who are using the research, people from the "real world". This also points to the discussion between traditional universities and applied colleges, or the new universities (in the UK), and sometimes business schools. This discussion reveals an underlying question about the value of research: are we looking for the best research or for the most usable research? This question should be answered when evaluating research. Evaluation rules often cause confusion about this aspect.

For instance, in the Higher Education and Social Change (EUROHESC) programme of The European Science Foundation (2008), I had the experience, as an assessor, of being asked to look at novelty and originality and, at the same time, at European added value (in a scientific way). The use of existing databases is highly recommended. The American science foundation, which participated in the programme, defined clearly that the research should be useful for society. These conflicting aims give rise to inconsistent assessments.

Another issue is the comparability of research across disciplines. Since there are huge differences in the way research is carried out across disciplines, this comparison is complicated: how do you compare a work of art with an economics paper?

The composition of assessment panels is also a very important aspect. Sometimes it is difficult to find the right people for these tasks. Peer review is being critized. Group behaviour and application of the rules of their own (sub-) discipline may unduly lead the assessments.

Often, evaluation systems are based on methods which have particular flaws. Publication rates and citation indices are used as an indicator of economic return on investments. They play a role in the research funding and in the assessment of research proposals. Promotion of academics is often also (partly?) based on this information. The use of citations, while accepted in life sciences, engineering and medicine, is being criticized in the social sciences and in the humanities.

In the global knowledge society, international publications are important. To measure the international profile of an institution and its academics, publications and citations, such as from the Institute for Scientific Information (ISI) in Philadelphia, are used. ISI, part of the commercial group Thomson Publishing, specializes in collecting and publishing bibliographical localisation and search instruments.

Public (government) funding is often (partly) based on scores obtained on the basis of ISI information (e.g. special research funding, "BOF" in Flanders).Their statistical information is less representative for the alpha disciplines then for the beta and gamma disciplines.[124] This

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[124]   Typology of disciplines based on the study object. Alpha disciplines study the products of human behaviour (e.g. history). The beta disciplines study non-human nature (e.g. biology). Gamma disciplines study human nature (e.g. psychology). This typology is mainly used in the Netherlands and in Flanders (Belgium).

may be particularly unfair in making budget allocations for the humanities and social sciences[125]. Techno-science fields have become the growth area in higher education. Academic disciplines and professional schools close to the market are likely to get more funding (Slaughter and Leslie, 1997, p. 242).

The evaluation of multi- or inter-disciplinary research useful to solve societal problems causes still further problems, which are not encountered by specialized research in one discipline.

Especially when compared with multidimensional problems and things one cannot compare, one often resorts to the few aspects that are "comparable," such as the number of publications.

Many other evaluation problems still have to be tackled such as: built-in errors by authors; "citation cliques"; not mentioning important influences on work; indicators, which allow for a real international comparison; the supremacy of English/USA research; and the difference in value between references in the humanities and in the exact sciences.

It seems that methods used in factories to measure productivity are being used in universities. Just like the situation that used to be the case in production companies, inward looking criteria are used, instead of market (stakeholder) driven criteria.

How to improve?

According to some academics, funding for research should be a right and should not be evaluated (Taylor, 2006). This view is closely related to the thinking about the unity of teaching and research, which is seen by some as the solution for the tension between research and teaching. Since it is still very much emphasized in the traditional research universities, this view will be developed in chapter 2.3.2. It seems that nostalgia and denial about the developments of the last decades are feeding this view.

The cost of the assessments and the cost of the science of studying assessments and rankings are both very high. Universities and their staff members have become obsessed with their position in these exercises. Teaching gets neglected; reward systems privilege researchers over teachers.

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[125]   Flanders (Belgium) is working on a "Flemish academic bibliographical data base", which will also list publications in Dutch. This is important for humanities and the social sciences.

For a more qualitative evaluation, more creativity will be necessary. One should first have a look at how research takes place in a specific discipline or how to tackle multi-disciplinary research before any evaluation system is put in place. It would be useful to examine if there is only an impact on the "peers" or also outside the field. In the former case, the paper or the field could be too specialized to have links to other disciplines. In the latter case, the relationship between a citation and the impact on society (regional or worldwide) relates to a different meaning of impact. Impact on other research is not the same as impact on society, which means usable for society. A more holistic approach is necessary in which a broader assessment of all research activities (not only publications) plays a role besides other qualities of the academic, such as didactical or societal involvement.

Rankings

The focus on measurement of performance has led to the growth of many different kinds of national and international rankings. Hereafter, I will discuss this topic in more detail.

International rankings, such as the Times Higher and Shanghai Jiaotong University rankings, have been criticized because of their methodologies, but rankings are here to stay. Most of them are based on research performance and boost the prestige of the research universities willing to play this competitive game.

The following phenomena explain the obsession with rankings: the explosion of College guides; the evaluation and assessment of research and of teaching and learning for whole institutions for quality assessment and accreditation; the benchmarking exercises; the national rankings; and now also the global rankings. They have to satisfy the public demand for transparency that institutions and governments could not meet.

Motives

Hazelkorn[126] (2009) explains the changing policy context in which these rankings arise.

Besides capital and labour, knowledge has now become important. A battle for brainpower, a scramble for students and skilled migration are illustrations of this fact. Since governments

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[126]   This paragraph about the motives and the following paragraphs about the impact and the search for alternatives are mainly based on personal written notes taken during a presentation of Hazelkorn (2009) during the European University Association Convention of European Higher Education Institutions, 18-21 March in Prague, unless indicated otherwise.

realize the importance of knowledge, they pursue aspects of new public management (accountability) rules towards higher education institutions. Students have become more active participants, consumers and customers of higher education. They realize that there is a link between higher education and careers and/or salary.

Since Higher Education is the engine of the knowledge economy, productivity, quality and status of higher education research are vital indicators. Global competition is reflected in the rising importance and significance of rankings. Rankings are an attempt to measure, and to re-order knowledge (some disciplines achieve more importance than others), a framework or a lens through which to see knowledge, and a measure of national competitiveness. They have an impact on governments. The French, German, Russian and several other governments want to increase their performance in the rankings. The Dutch government uses the rankings in their selection of immigrants.

Impact

Hazelkorn (2007, 2009) and Salmi and Saroyan (2007) also draw attention to the impact these rankings have on higher education decision making. Higher Education Institutions (HEIs) take their ranking status very seriously. Reputation, visibility and brand depend on it. Despite context, mission, age or size, all HEIs are drawn into the global market place. Institutions are responding to the rankings. 63 % of HEI leaders have taken strategic, organisational, managerial and academic action in response to results (Hazelkorn, 2009). Those actions have an influence on research, organisational aspects, curriculum, students (targeting of high achievers), faculty and academic services. The HEFCE report on rankings (2008/14, p. 57), which includes the findings of the international survey carried out by Hazelkorn (2007), points out that despite the scepticism in the higher education sector about league tables or rankings, many institutions are strongly responding to them.

Based on Foucault's theory about discipline, surveillance and punishment, Sauder and Espeland (2009) point out that, through coercive and seductive means, rankings are able to change perceptions and influence the behaviour of top management in higher education institutions[127].

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[127]   Mentioned in Inside Higher Education, "Using Foucault to Deconstruct Rankings", February 3, 2009

Rankings also have an impact on the students. In particular, the international graduate students are highly sensitive to global rankings. Ranking is a short listing mechanism. Ranking has an influence on their employment. Students look at rankings, but the middle ranking universities may be more affected by this than the top universities.

Rankings have an impact on academic and industry partners. They are the basis for academic partnerships. Some industry partners, such as Boeing, use rankings to see where to invest for scholarships[128] (Hazelkorn, 2009). Employers have implicit rankings based on their own experiences which are self-perpetuating. UK employers look at more highly ranked HEIs. Boeing ranks universities by job success because it is not happy with other rankings (Basken, 2008; Hazelkorn, 2009).

They have an impact on faculty and academic work. This can be seen in the emphasis on academic performance and output, and in the ranking of the underperformers. They have an influence on staff morale (which is good when institutions or departments are highly ranked). Rankings give social and professional capital, and offer research power in the deregulated global division of academic labour.

It becomes clear from this brief impact analysis that the audience or the user of rankings goes beyond the usual suspects. High achievers (institutions and students) are sensitive to it. Rankings influence decisions since they are seen as having an impact on status and reputation.

One can wonder if rankings work. There seems to be a gap between national/supra-national ambitions and the global performance of HEIs. Rankings are a metaphor for competition within higher education reforms. They are used to inform policies, for resource allocation and accreditation, and for cross-national comparisons.

It is difficult to justify that they are really an indicator of global competiveness knowing that there are over 17,000 HEIs in the world. Research actively takes place in the top 500. 250 may be described as world class, research intensive institutions. The top 100 is much debated; perhaps, 25 are in the super league.

The 25 in the super league are almost all about 200 years old. They have at least 2,500 faculty members and less than 25, 000 students; they attract and retain people; they are selective; they normally possess US $1 bn endowments and US $2 bn annual budgets (Hazelkorn, 2009).

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[128]   Example: Florida Agricultural and Mechanical University (FAMU)/Boeing FIRST Scholarship

Based on the above information, concentrating resources has now become a favoured strategy of many governments and HEIs. The elite university, with small numbers, and the vertical differentiation of the higher education system as a whole are part of the neo-liberal model.

Mergers and concentrations can increase productivity, quality and efficiency, but it is less certain that this strategy works for HEIs, except for specific disciplines such as the life sciences (bio-medicine and medicine). If the publication score is calculated relative to the population, Switzerland becomes number 1 and the USA number 40.

Few can afford to play this game. Therefore, there are few moves on the top. Since 2003, the major moves in the top 100 are from non-USA movers. Some strategic alliances are built with the aim of moving up (such as Manchester, UK; Copenhagen, Denmark; and Paris, France).

The search for alternatives

The existing one-dimensional and aggregated international ranking models are being criticized. How can we go beyond rankings?

Rankings brought positive, but also perverse effects. On the one hand, a sense of urgency, acceleration and an increase in performance. On the other hand, a distortion and focus away from innovation towards narrow science.

It is an urban myth that the use of comparative information, such as from bibliometrics used in the bio-sciences, can be used for comparison with other disciplines. Plausible and meaningful measurements of research and knowledge motion are still to be found. Indicators damage the RDI (research, development, innovation) enterprise (new, original and usable are not exactly "narrow science").

It is another urban myth that the higher ranked are "better" than the lower ranked or the not ranked. There are over 17, 000 HEIs worldwide; why would it be a failure not to be in the top 3%?

Rankings play a role in world class status, accountability and national competiveness. However, measuring the wrong things can produce distortions. Measuring is never value-free. The recession will be long and hard. The urgent needs of society are important. Governments and HEIs should rethink their values. Among the values of a world class system are inclusiveness, access, effectiveness, attractiveness and age range. Important characteristics of a world class system are international reputation and competition in global employment.

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The HEFCE report on rankings (2008/14, p. 59) mentions the tension between league tables and institutional and governmental policies with regard to widening access, lifelong learning and community engagement.

An alternative strategy would be to have a diverse and coherent portfolio with the aim of horizontal differentiation. This seems a more social–democratic model with support for excellence wherever it occurs. Therefore, a "whole of the country or region" strategy is necessary, such as, for example, in the Catalonia university system that provides the context for our case study.

Besides Hazelkorn's (2009) analysis, many other actors are concerned about the ranking phenomenon. In early 2009, the European University Association set up a working group on rankings in order to define a strategy for the association to deal with the growing number of policy initiatives in this domain. The following issues were to be considered:

- the impact of rankings and how they contribute to the quality of European higher education at institutional, national and European levels;

- how to use examples of good practice to enhance institutional learning in assessing outcomes of teaching and research activities;

- how to improve data provision at the university level to improve the quality of information required by different stakeholders. [129]

A multi-dimensional mapping of European Universities has been proposed as an answer to a call from the European Commission to develop a multi-dimensional ranking instrument for Europe (van Vught, 2009). The transparency created by this mapping would make it easier to seek collaboration with universities in the same league or with matching interests.

An expert group within the Commission's Directorate for Research wrote a report on university-based research assessment (2010) which developed an outline of a multi-dimensional research assessment matrix.

The multi-dimensional ranking, such as the university rankings of the Centre for Higher Education Development (CHE in Germany), seems to be much broader in its aim. It is more student-focused and makes it possible to choose a university according to several criteria.

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[129]   "EUA launches rankings working group", EUA newsletter 2/2009 www.eua 1/30/2009

CHE also has a research ranking and an excellence ranking, which rank the best universities for research in Germany and in Europe.

The CHERPA-Network consortium (of which CHE is a leading partner, together with the Centre for Higher Education Policy of the University of Twente in the Netherlands) has been selected by the European Commission to carry out a feasibility study on the design and testing of a new multi-dimensional global university ranking[130].

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[130] "Brussels update: "Commission launches feasibility study to develop a multi-dimensional university ranking", EUA newsletter 11/2009 www.eua.be 1/12/2009

Appendix 5

Section 2.3.3: Bringing teacher and research together?

Many attempts have been made to link teaching and research. UOC also tries to make this link.

In the USA, the National Science Board recommended in an important policy statement (1996), that the integration of research and teaching at all levels would promote the public support for science and engineering (Duderstadt, 2000, p. 119). Higher education has always tried to link these two activities. However, at government level, in the USA and also in Europe, often two different departments or ministries are in charge of education and research.

Hereafter, I briefly summarize the ongoing debate about the research-teaching link, which shows how complex it is to reconcile these two activities.

Many traditional research universities still (more and more due to the ranking game) embrace the concept of research based teaching. It could be a real answer to the tension, but it is often a nice slogan to fend off criticism of the neglect of teaching in research driven institutions. This solution also causes a problem for teaching-only or teaching-led institutions or for institutions that are attempting to carry out research, but receive less funding, especially nowadays since research funding is being more concentrated in centres of excellence.

Hughes (2003) points out that the relationship between research and teaching has been taken for granted by many universities. However, the Humboldtian link between research and teaching has been seriously questioned. Research challenging the link (Feldman, 1987; Hattie and Marsh, 1996) and showing that there is little, if any, relationship between research productivity and teaching excellence has led to a fierce defence of the link which should be constructed and planned for (Boyer Commission, 1998; Healey and Jenkins, 2003; Jenkins, Breen and Lindsay, 2003).

From a recent literature review, Hughes (2003) concluded that anticipated and empirical evidence to support the existence of a research and teaching relationship did not exist. He concludes that the relationship is based on a myth (misinterpretation of available evidence, mystification of the debate and mischief of the protagonists). In one of his works, Barnett (2003) states, that the strategy of linking the two is flawed. It neglects substantial differences between both activities. It fails to see the ideological character. It does not see that research

and teaching are not unitary activities across the university, but are different across different disciplines.

Robertson and Bond (2001, 2003) state, that what is missing in this debate is knowledge of the experience of academics about this link. They point out that more insight into how academics see this relationship and act on it in practice will reveal the complexity and the variation in that experience. Their case study of 25 academics at the University of Canterbury (New Zealand) shows that the academic epistemological beliefs are critical to understanding the link. For them, universities consist of different communities of enquiry, in which the relationship between research and teaching varies. This also means that student learning varies according to the differing disciplines.

It is often said that research has a negative impact on student learning. However, Duderstadt (2000, 79-80) states that, in general, no negative impact exists if an emphasis on research exists in an institution, except for a small number of cases. Since, in his view, teaching and research are both aspects of learning, he is also in favour of involving undergraduates more in research. According to Nybom (2003), Humboldt was rather thinking of graduate education when he talked about the link between teaching and research.

The study of student experiences has been somewhat neglected (Murphy *et al.*, 2003). Light (2001) indicates in his book "Making the most of College. Students speak their minds" that most students pointed to activities outside the classroom as their most valuable experiences (jobs, internships, extra-curricular activities, independent study projects, writing projects, small classes and seminars). Some research has been carried out on developing research based courses for undergraduates and postgraduate students, and on how the learning experience of students increases if they are taught by research active staff (Brew, 2001).

Recent research by Elen, Lindblom-Ylânne, Clement (2007) looks at the opinions of academics in different disciplines from two universities, both members of the Leading Research Universities (LERU) group, about the link between research and teaching. The study confirms that teaching in these places is more research- than student-centred, and that a mature epistemological disposition supports the link between research and teaching. Another project (Verburgh, Elen, Clays, 2006) is following up on the impressions of students about this issue. Conclusions are still to be elaborated and interpreted.

Appendix 6

Section 4.4.3: Stages of my research process

Stages of my research process

I distinguish four stages: the first research period 2002-2003, the intermediary research period 2003-2007, the second research period and the reflection on results.

First research period 2002-2003

November 2002: Set up and preparation of first round of interviews and data collection

- Preliminary meeting between INSEAD/KULeuven research team and UOC director of research. Professors S. Dutta (INSEAD) and P. Verdin (INSEAD, KULeuven) were present as supervisors of the first research period.

- Proposal for development of UOC case. (see appendix 7)

- Agreement with UOC on interviewees based on content of proposal (see below)

- Preparation of interview protocol based on EFQM model (Leadership, Policy and Strategy, People, Partnership and Resources, Processes, Customer Results, People Results, Society Results, Key Performance Results) (see appendix 8). The model has been explained at the end of chapter three.

- Every interviewee gets questions based on these categories. Depending on the function of the person interviewed the researcher gets a different view on the issue.

The proposal mentioned why there is an interest in the UOC case:

Two reasons:

1. E-Learning side: Why is UOC, compared to others, doing well during the e-boom?

2. Strategic and organisational perspective: The link with chapter 1, 2 and 3 (literature) was made after the data were analysed. This is the way it is done by Eisenhardt (1989) and also in Grounded theory.

- What is unique about their organisational or business model compared to other universities?

- How successful are they in terms of some relevant indicators (results according to the last four criteria of the EFQM model)?

- What unique competences does UOC possess, which unique assets, competitive advantage and what are the competition drivers?

- How can UOC sustain its position?

- As UOC further develops will it be able to keep its strategic position or will it move towards the position of more traditional universities and also take on research?

- How important is the role of the leadership?

- How will the career path of the faculty be managed as well as the support network for teaching?

- Will UOC expand within Spain or internationally?

December 2003: First round of in depth interviews and data collection

- Collections of documentation at UOC (see appendix 10)

- 17 in depth interviews on December 2 and 3 of one hour and 30 minutes

- Two interviewers per interview. One takes notes while the other asks questions and possibly react to the answers. My role was to ask the questions and react to the answers. Ms Van Poeck was assisting for taking notes.

- Subsequently notes are transcribed.

- Documentation is classified according to the 9 EFQM criteria introduced at the end of chapter 3

- Data from the interviews are compared with these criteria

- Remaining questions are submitted to UOC for further clarification and completion

- A structure for a teaching case is set up. The motive and the purpose of the teaching case (eg in terms of intended learning outcomes) are explained in the introduction of chapter four.

- While writing the teaching case the classified documentation and the data from the interviews are integrated.

- A draft of the teaching case is presented to UOC for a check of factual data

- The final case is finalized and published: De Jonghe, A.M. et al. (2003)

- A teaching note has been drafted but not yet published

Intermediary research period 2003-2007 (list of papers in appendix 9):

Analysis and reflection undertaken with regard to:

- Issues encountered at UOC: pedagogical, technological and organisational model (issues explicitly relating to chapter one, two and three issues)

- The teaching-research tension in universities

- Case research for teaching purposes and case research for scientific purposes

Second Research Period 2008-2009

Reflection

- I wonder if core values and underlying cultures are preventing changes in some universities from a professor-driven model with a focus on discipline based research, to a focus on student-centred teaching and learning. I wonder what the roles for ICT can be. (research question 4)

- I need to study an HEI where ICT is strategically embedded in the mission. I want to know in what ways UOC is different with regard to the core values of traditional HEIs (research question 2)

Process

- I go back to my previous research at UOC and decide to make a comparison with the first period 2002-2003. I will try to find out how UOC copes with the pressures on contemporary academia and what the lessons for change are for UOC (research question 3).

- I will look at ways the UOC case can inspire traditional universities. What can they learn from a newcomer to address some of the dysfunctions of traditional universities (research question 6).

- This time I have difficulties getting access. I carry out a few internal interviews and I have to supplement my data with several other methods such as in-depth analysis of

presentations about UOC at scientific conferences, extensive search on the internet focused on UOC, consultation of research papers written by academic or staff members at UOC, analysis of documents written by the Catalan Quality Agency and by the European Foundation for Quality Management, comparison with information available in online data bases such as the one from UNESCO and Re.ViCa, Reviewing (traces of) Virtual Campuses, analysis of speeches of the Rector.

- I pinpoint several tentative constructs, which could be important for my study. Therefore I compare the data of each period with this construct.

- I realize the answers to the research questions are rather complex. I need to get a clear picture of the changes that took place with regard to all the aspects I studied during the first research period.

- I develop a case update based on the structure of the first case write up (chapter five).

- I sharpen my initial constructs by more analysis of the data. I refine them and find evidence supporting the constructs.

- I build my hypotheses by verifying the emergent relationships between constructs and the evidence in the different research periods of the case.

- I realize that changes took place at UOC between the first and the second research period.(research question 5)

- I build my change model based on experience at UOC.

Results

- I answer research question 2 (In what ways is UOC distinctive from others?) by indicating how UOC is different but is also becoming more like other HEIs. I indicate the change processes they went through.

- I answer research question 6 (What can other universities learn from UOC?) suggesting lessons for other universities.

- I present the requirements for success for other universities.

Appendix 7

Section 4.4.3: Proposal for development of UOC case.

First Research Period 2002-2003

The proposal mentions the following reasons as to why there is an interest in the UOC case:

- ➢ E-Learning side: Why is UOC a success among many failures during the e-boom?

- ➢ Strategic and organisational perspective:

  - What is unique about their organizational or business model compared to other universities?

  - How successful are they in terms of some relevant indicators?

  - What unique competences does UOC possess, which unique assets, competitive advantage and what are the competition drivers?

  - How can UOC sustain its position?

  - As UOC further develops will it be able to keep its strategic position or will it move towards the position of more traditional universities and also take on research?

  - How important is the role of the leadership?

  - How will the career path of the faculty be managed as well as the support network for teaching?

  - Will UOC expand within Spain or internationally?

Appendix 8

Section 4.4.4: Preparation of interview protocol based on EFQM model

The EFQM framework exists of nine criteria or themes which cover all the aspects related to managing an organisation. Interview questions are related to these criteria. The same question asked to different persons gives different perspectives on the issue. For every criteria an example will be given. The nine criteria of the EFQM model are:

Leadership:

How important is the role of the leader to facilitate the mission and vision? Is he personally involved in the organisation? Is he motivating and supporting the people in the organisation?

Policy and Strategy:

How does the organization implement its mission? Is it supported by relevant policies, plans, objectives, targets and processes?

People:

How does the organisation manage and develop the full potential of its people at the individual, team-based and organisation wide level in order to support its policy and strategy?

Partnerships and resources:

How does the organisation plan and manage its external partnerships and internal resources in order to support its policy and strategy?

Processes:

How does the organisation design, manage and improve its processes in order to support its policy and strategy? (e.g. core processes such as teaching and learning, research)

Customer results:

What is the organisation achieving in relation to its external customers? (e.g. students, employers) Any indicators?

People results:

What is the organisation achieving in relation to its people? Any indicators?

Society results:

What is the organisation achieving in relation to local, national and international society? Evidence? Indicators?

Key performance results:

What is the organisation achieving in relation to its planned performance?

Appendix 9

Chapter 4: List of papers from intermediary research period.

Analysis and reflection: 2003-2007

- De Jonghe, A.M. (2003b). UOC (Universitat Oberta de Catalunya); A Case of Dramatic Change: Leapfrogging Traditional Universities. University of Bath, School of Management (DBA in Higher Education Management), November 2003, working paper.

- De Jonghe, A.M. (2004c). The Teaching-Research Tension in Universities: Causes, Consequences and Management Issues, University of Bath, School of Management (DBA in Higher Education Management), February 2004, working paper.

- De Jonghe, A.M. (2004d). A comparison of case research and writing for teaching purposes with case research and writing for scientific purposes: Is there really a difference?, Paper peer reviewed and accepted for the North American Case research Association (NACRA) for its annual meeting, October 7-9, 2004, Sedona,AZ.

- De Jonghe, A.M. (2005e). Reorganising the Teaching-Research Tension. In: *Higher Education Management and Policy,* Vol.17, No 2, pp 461-610 December 2005

- De Jonghe, A.M. (2007f). Dealing with dilemmas in contemporary higher education In: McCuddy, M.K., van den Bosch, H., Martz Jr. Wm. B., Matveev, A.V., Morse K.O. eds. (2007). *The challenges of educating people to lead in a challenging world*. pp 73-93. Dordrecht (NL): Springer

Appendix 10

Chapter 5: List of documents selected and studied during first research period 2002/03.

General information.

- Universitat Oberta de Catalunya (UOC) www.uoc.edu

- UOC – Universal Learning Dimension: brochure with general information

- The Open University of Catalonia: a real e-learning success story (2002)

- Universitat Oberta de Catalunya; The University with the Virtual Campus, slide presentation

- UOC, Universitat Oberta de Catalunya, Presentation at World Educational Market (WEM) by Ramon O'Callaghan, Director of IN3, Lisbon May 2002

- 21st century Literacy in a Convergent Media World. UOC (Universitat Oberta de Catalunya)

Information classified according to the criteria of the EFQM.

Leadership

- Gabriel Ferraté: Biographical information. UOC, not dated, not attributable.

Policy and strategy

- Universitat Oberta de Catalunya, Fundacio per a la Universitat Oberta de Catalunya, Proposta d'estatuts, Barcelona, September 1994. (Proposal for statutes of the UOC Foundation)

- Universitat Oberta de Catalunya, Procediment per a la creacio de la Universitat Oberta de Catalunya, Titulacions a impartir, La incorporacio de les noves tecnologies en el model didàctic de la UOC, La seu central, September 1994.(Procedure for the creation of the UOC, the incorporation of new technologies in the pedagogical model of UOC)

- Universitat Oberta de Catalunya, La Universitat sense distàncies, September 1994 (UOC, the university without distance. Proposal from the Catalan government to create UOC)

- Com s'estudia a la Universitat Oberta de Catalunya, La universitat sense distàncies, May 1995, project proposal for information brochure for 1995. (How to study at UOC, the university without distance)

- Contracte - Programa 2001-2004 entre la Generalitat de Catalunya i la Universitat Oberta de Catalunya (Programme - Contract between the Catalan Government and UOC)

- Slide presentation in Catalan about the mission, the vision, the pedagogical model, the organisational model, the technological model and the governance structures. UOC, not dated, not attributable.

- PEUOC.edu 2002-2005: presentation about the strategic analysis of the current situation in preparation for the next three years. UOC Internal document.

People

- UOC-La Universidad virtual. Formacion universitaria a travès de la red. Seleccion de Personal Docente Colaborador, March 2002 (about pedagogical model and selection of teaching collaborators)

- Ser consultor en la UOC (internal document for preparation of teaching collaborators)

Partnerships and resources

- Slide presentation about internationalization plans, September 2002.

- The virtual library; A library to suit all your needs, brochure

- Gecsa (part of UOC group), Comunitats virtuals e-learning (specialist in communication and e-learning), brochure (about virtual e-learning communities)

- Bates, A.W. (Tony) (2001), Como gestionar el cambio tecnologico. Estrategias para los responsables de centros universitarios, Editorial Gedisa Barcelona. (translated from English, Managing technological change, 2000, Jossey-Bass Inc., about strategies for university leaders)

Processes

Teaching/learning:

- Learning in a virtual environment, UOC, slide presentation

- The educational model, slide presentation

- Graduado Multimedia a distancia: Programme brochure of distance studies in multi media

- Duart J.M. & Sangrà A., "Formacion universitaria por medio de la web: un modelo integrador para el aprendizaje superior", chapter in book Duart J.M. & Sangra A., eds. (2000) Aprender en la virtualidad, Editorial Gedisa, Barcelona. (University education through the web, an integrated model for higher learning. In: Learning in virtual environments)

Research:

- IN3 information brochure

- IN3: Brochure doctoral programme

- IN3 Activities Report 1995-2000

- Newspaper IN3 institute, July 2001

- Welcome to IN3, R. O'Callaghan, 15 March 2002 (about the activities of IN3)

- IN3: Internet Interdisciplinary Institute, presentation by Ramon O 'Callaghan, Director IN3, October 7, 2002

- Estructracio IN3, about structures, projects and knowledge transfer, Presentation by Ramon O'Callaghan, 27 November 2002

- Manuell Castells: Biographical information

Customer Results

- Titulacions Homologades: slide presentation about study results obtained in 2001-2002/2 and 2002-2003/1

- Campus Virtual, September 2002, University news paper

- La universitat oberta als nous temps: Information brochure for students about UOC

- La formacion de pogrado de la universidad virtual : Information brochure for students about learning at a virtual university

People Results

- Information obtained by interviewing

Society Results

- Several newspaper articles from Catalan newspapers about the start up of UOC in 1994. Several articles focus on Rector Ferraté.

- Publicity for UOC in newspaper EL PAIS, 3 December 2002.

Key performance Results

- Statement of expenses and income for 2002

- Policy and strategy documents mentioned above (non-quantitative performance results)

Appendix 11

Section 8.1.2: Unbundling of multiple activities at the individual level

In chapter two (2.2.1), I mentioned the disciplinary practices and the characteristics of the domains of inquiry. Much has been written about research-based teaching as a solution to the problem of reconciling multiple tasks. In general, *a difference* in attitude towards research and teaching *between disciplines and between individuals in disciplines* will have to be considered.

In certain disciplines, such as the business and management discipline, where the tension between its status as an applied field and its status as an academic discipline is causing many problems, the debate will be particularly difficult. Harrington and Booth (2003) report from an empirical study carried out in 2001/2002 on research and teaching issues related to undergraduate business research methods courses at several UK universities that the tension, the conflict and lack of consensus about questions of teaching and research form a significant barrier and even a threat to effective teaching, learning and research. Engwall (2003) suggests that management studies are addressing the needs of the "Mode 2" society. Should the debate not be about the combination of different types of scholarship to the benefit of all[131]?

The tension is not so much between research and teaching but in the attitude or lack of respect for the challenges, the difficulties and the contradictions, which the different activities are experiencing. Respect for intellectual achievements in their context should be the rule. This means a strategy of academic differentiation (Barnett, 2003); not one against the other, but, for example, acceptance of different models and assessments. A change in attitude will therefore be necessary.

Would it help to create non-disciplinary intellectual structures or to deliver interdisciplinary teaching in teams (Duderstadt, 2000)? For Castells (2009), a university should be built on inter-disciplinarity. For him, a university based on disciplines is becoming obsolete since it is a consequence of setting the boundaries after settling the fights between the different scientific groups.

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[131]   Brady, Ch. (2009), Theory and practice in equal measure. Financial Times, June 1

Meanwhile, researchers will continue using ICT for their own (specialization) goals. There is a danger that they will continue neglecting teaching because they do not see the new, more democratic, ways of knowledge production. Some will continue striving for the old solution of stating the unity of research and teaching.

In the end, the new learning made possible and enhanced by the possibilities of ICT will lead to new ways of knowledge production. This could lead to the involvement in knowledge production of not only experts from the disciplines, but also of students and external parties. The horizontal learning networks will be able to participate in knowledge production. This will take time and academics in the disciplines will be difficult to convince.

Meanwhile, teaching is still organised in an old fashioned way: many individuals in different places teach and assess their own interpretation of selected items of their disciplines (Greenberg, 2004). The Bologna requirements have been interpreted by many as an alleviation of their tasks and created the impression that students have become more consumerist.

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http:// www.moodle.org open source community based tools for learning; a course management system (CMS), free open source software package designed to help educators create effective on line courses

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http://www.mail.google.com (built on the idea that e-mail can be made more intuitive, efficient and useful, even more fun)

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