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Introduction

1. The changing role of higher education for regional development policy

The idea of a research project about higher education and local economic development started from the observation of the fast changing role of tertiary education for regional and local economies and from the urgent need to tackle the problems produced by these changes.

The phenomenon can be depicted as follows.

From a cautious beginning, knowledge has progressed to the centre of economic theory, particularly in the last decade, and there is now a wide spread belief that knowledge is one of the main ingredients for economic growth (Becker 1993; Drucker 1993; Rullani 2001; Wolf 2002; for a discussion from four different disciplinary perspectives). The general idea is that the availability of «knowledge workers» (Rifkin 1995; Aronwitz & De Fazio 1997) determine the rate and quality of economic growth, localizing knowledge-intensive industry in those nations more able to attract or educate such a kind of workers and relegating «labour intensive» activities to less provided nations (Castells 1993; Carnoy 1995).

The consensus about that belief has created an increased attention towards the two main institutions that are intended to create knowledge: higher education institutions (HEIs) and firms. While it is obvious that HEIs are the main generators of knowledge, until very recently the same thing could not be said about firms. It is, in fact, thanks to progress in management studies during the 1990s that firms are considered today a main and obvious generator of knowledge (Nonaka and Takeuchi 1995).

The following step of analysis was the study of university-industry linkages as generators of knowledge, which is in itself an autonomous field of study (Branscomb 1999). It is evident though, at least for European re-

gional studies researchers, that HEIs and firms, and the linkages between them, are not the sole providers of knowledge in every day reality and that the whole «regional learning system»[1] has to be taken into account: «companies draw knowledge from a variety of sources and – in order to understand the process of knowledge transfer, and the contributions that HEIs make to regional development through knowledge transfer – it is important to look at HEIs and knowledge transfer in a regional context […] and the concept of learning region is the best point of departure […]»[2].

Being companies out of public control, higher education policy studies and regional policy studies, as well as policy makers, focused on education institutions and «regional learning or innovation systems», respectively, as the main tools for policy in the knowledge economy.

As a consequence, public attention for education has reached unprecedented levels in many countries and it was able to gain front pages in Britain even during war times[3]: «Our number one priority for investment is education» (Tony Blair 1999); «Tony Blair says his priorities are, education, education, education, so are mine (but in a different *order)*» (John Major 1997) and Alison Wolf's statement (2002, p. 10) that «the belief in education for growth runs deep and wide beyond our political classes, replacing socialism as the great secular faith of our age» seems something more than a provocation.

Among the many actors operating in education, universities are considered the most strategic for economic development (Castells 1991) and they have received the greatest public attention. The number of students going into tertiary education has increased steadily. In former West Germany in 1960, 6 per cent of young people completed the *Abitur*, the academic school-leaving certificate that gives access to university. By 1997 the figure was 37 per cent. This more than six fold increase almost exactly parallels the growth in university and polytechnic (higher-technical) students (Wolf 2002: 173-174). In France, German, Great Britain and Italy, between 1980 and 1995, a doubling in the numbers completing a first degree is followed by a near doubling in the numbers of university students. So that today in Western Europe over a third of the age cohort is enrolling in tertiary education (and governments' plan is to reach soon a fifty per cent level) and this number increases to two-thirds in the United States (OECD 2002).

[1] For a discussion and definition of «regional learning systems» in comparison to «regional innovation systems» see Cooke and Morgan (1998). Briefly we can say that «learning»– in the Piagetian definition – is only a first step to innovation and only «regions which possess the full panoply of innovation organisations set in an institutional melieu (Jonson and Gregersen 1996; Maillat 1995) where systemic linkage and interactive communication among the innovation actors is normal, approach the designation of regional innovation system» (Cooke and Morgan 1998: 71).

[2] Rutten R., Boekema F. and Kuijpers E. (2003), *Economic geography of higher education, setting the stage*, in Rutten R., Boekema F. and Kuijpers E. (2003) (eds.), *Economic geography of higher education*, Routledge, London, pp. 4-5.

[3] See the students' loans issue ending up on British tabloids front pages in January 2003.

The growth of higher education for both financial and human resources goes together with a shifting of policy making from central governments to regional and even local governments[4] (see for a European discussion Cooke and Morgan 1998).

In Europe the phenomenon of «regionalization» is associated with an increasing disparity of growth rates among regions and an increasing convergence at the national level (Cooke 2002).

The increasing competition among regions and local systems to attract FDIs (foreign direct investments), jointly with administrative and fiscal «regionalization», has produced a demand of higher education from students and households towards regional and local governments and this phenomenon is especially evident in Italy (Leonardi 1993).

Households are beginning to consider tertiary education as a necessary prerequisite for a successful career and even the only chance to gain access to some job opportunities and services. So, it becomes a central civic right in order to provide equal opportunities to all and the presence of a higher education institution in the region has the same socio-economic relevance and political priority of fundamental civic infrastructures such as motorways, airports, primary and secondary schools.

The increasing attention of academics, national governments and public opinion for innovation, national innovation systems (Nelson 1993) and scientific research, increases the demand of tertiary education in the periphery as the only tool to avoid cultural and economic marginalization. «Regionalization» and increased freedom of HEIs to decide their own future, looking for students, money and resources in short supply, make this demand easily satisfied and HEIs' branches, also thanks to new technologies and local governments' financial help, are mushrooming everywhere. The phenomenon is especially evident in countries with a very developed regional and local administrative structure.

In Italy and Europe many factors are acting in developing a tertiary education system embedded in local communities:

- political pressure from citizens on regional and local policy makers for easier access to tertiary education and improved employability, with a parallel demand for a tertiary education integrated with local productive needs and aspirations;
- fixed or decreasing resources from central government and growing internal costs create HEIs' financial dependence from external sources either with a private origin or allocated on a competitive base;
- financial resources from the central government (see for instance D.lgs 297/1999, the main law for financing research), from the European

[4] According to the Italian Constitution, regional governments are the ultimate responsible for education and Italian local governments very often provide very substantial help, in the form of money and estates, to attract tertiary education courses in their own territory.

Union (VI framework) and even from local institutions (for instance bank foundations) tend to be subordinated to the evidence of local partnership and effective local economic impact;
- HEIs' autonomy and competition among universities for students, human and financial resources, is a major booster for tertiary education embedding in local communities and for HEIs having an active role in partnership and networking;
- in many regions firms' demand for skills and competence, also to gain access to European funds, can be satisfied only by HEIs.
- This growing pressure, for a booming higher education sector and surrounding production systems in need of competences to collaborate (Etzkowitz and Leydesdorff 1997), finds nonetheless major obstacles in many European countries:
- HEIs are gaining freedom as far as new sources of financial entrances and spending are considered, but in many European countries, such as Germany and Italy, for a paradox they don't have the same freedom to choose their own human resources;
- Careers inside HEIs seem to go in the opposite direction in respect to vital financial resources for research coming from the outside. Academic careers still depend from *élite* and publishable research while universities' survival depends on «university-industry linkages», so that inside some HEIs' governance structures there is no incentive at all for academics to engage in vital local partnerships and networks;
- as a consequence of the previous point, we may have a sacrifice of knowledge investments in research areas valuable for regional development to the advantage of publishable research as determined by international interests according to the law «publish or perish». The example of Galles, as depicted by Bob Morgan (2002), is emblematic: «The concentration of effort in achieving published research, however, can result in high opportunity costs in terms of the contributions institutions can make to local economic development»[5];
- it is possible to argue that in the most successful cases (Keeble and Wilkinson 1999; Morgan and Cooke 1998) university-industry linkages need also non market mechanisms in the form of national and regional government intervention, providing regulations, institutional infrastructure, incentives and sometimes vision and will;
- in countries where industry is characterized by family owned SMEs, involved in traditional productions, interactions between HEIs and firms may prove difficult because of different objectives, methods, values and culture.

[5] Morgan B. (2002), *Higher education and regional economic development in Wales: an opportunity for demonstrating the efficacy of devolution in economic development*, «Regional Studies», 2002, n. 36, p. 68.

Leoni and Manzoni (2002) shows that in the present economy and configuration of the value chain, the most widely requested form of knowledge are individual competences such as *problem* solving, relational skills, professional communication, team work and cooperation, and that is why firms pay increasingly less attention to positional goods as university degrees, obtained through individualistic accumulation of «traditional knowledge», and pay increasing attention to expensive psychometric tests.

The problem is that many HEIs seem to be locked in their own glorious «Humboltian tradition» and unable to shift from «Mode-1» science to «Mode-2» science (Gibbons, Limoges, Nowotny, Schwartzman, Scott and Trow 1994)[6]. On the opposite, using Becattini's words (Becattini 2002), there is a need to go back, ideally, to a Socratic kind of knowledge.

High profile attempts to maintain, or promote, differentiation between research-led and access oriented institutions, with the first ones consolidating into a more prestigious and traditional «Mode-1» science, seem doomed to failure in a democratic society aiming at granting equal opportunities to all (Gibbons *et al.* 2001: 87) because they are often conceived – using Alison Wolf's words – as «a great idea for other people's children» (Wolf 2002: chapter III).

However, 1) assumed the importance of improving university-industry linkages and embedding HEIs in their own regions; 2) identified the obstacles that is necessary to remove in order to improve these linkages; it is crucial to clarify if the present booming of tertiary education is in any way consistent with industrial districts characterised by family-owned SMEs involved in traditional productions.

According to Signorini's huge theoretical and empirical investigation (2000, chapter XVII) about Italian local systems, commissioned by the Italian Central Bank, inside industrial districts family-owned businesses are 94 per cent of all and in ordinary local systems this percentage is on average 90 per cent[7]. So that, on a national base, more than 90 per cent of Italian businesses are family-owned.

[6] «One of the characteristics of Mode-2 science, we claimed, was that knowledge was now being generated *in the context of application* […]. The implication of our argument was that science could no longer be regarded as an autonomous space clearly demarcated from the "others" of society, culture and (more arguable) economy. Instead all these domains had become so "internally" heterogeneous and "externally" interdependent, even transgressive, that they had ceased to be distinctive and distinguishable […]» (Gibbons *et al.* 2001: 1).

[7] Signorini bases his work on Sforzi's definition (1991) of «sistema locale di lavoro» as empirically developed by Istat (1997). A «sistema locale di lavoro» can be roughly defined as an area that self contains the commuters' movements on a daily basis. According to this criterion, the entire nation can be divided in «sistemi locali di lavoro» and some of them have the additional characteristic of being «industrial districts" or "almost industrial districts». Basically, the main characteristic that a local system must posses in order to be attributed the additional label of «industrial district» is a mono industrial culture.

According to the same investigation (Signorini 2000: chapter. VII), the average number of employees for each business is lower than ten in every Italian region (Tuscany 6,3%, Lombardia 9,4%, Trentino 6,2%) and even in the most heavily industrialized local systems these percentages don't go higher than 18 on average. The fact that these family-owned SMEs are involved in very traditional and often labour intensive productions doesn't help the development neither of intellectual employability nor of fruitful cooperation between HEIs and industry.

2. Research questions and objectives

This research is of a practical nature and is intended to be the first step, and indeed an exploratory step, towards a very ambitious and long run objective, that is to design higher education policies and regional development policies to favour valuable interactions and linkages between HEIs and the local systems and regions in which they are embedded, with specific reference to the Italian case, with its peculiar industrial districts and cities (Lazzeretti 2003). This is not to say that HEIs should become service-oriented institution. As well expressed by Bob Morgan for Wales, their regional role must be consistent with their nature and mission: «For the universities there must be a realization that they are there to serve Wales, not Wales to serve their aspirations» and «this is not to say that the research community should become too parochial. The challenge surely is to device a system that allows all universities in Wales to develop a research capability that will contribute to the development of welsh economy, whilst still being an integral part of the UK's research community» (Morgan 2002: 72). That is a necessity because, using Branscomb's words «universities are by tradition-one might say by intellectual necessity-open to participation by scholars all over the world. Yet their sources of funding are almost entirely domestic, and in most countries (including the United States) primarily governmental. Politicians may be expected to ensure that the benefits of university research are effectively, if not primarily, captured by domestic workers and investors» (Branscomb 1999: 3).

The research will start from the most evident, provocative and hot sign of crisis in the relation between HEIs and local systems, which is a very evident and paradoxical intellectual unemployment in knowledge economies, in order to investigate the concept of «knowledge» and the kind of knowledge that HEIs should provide to favour embedding and valuable interactions with local communities. We believe, in fact, that a clarification about the kind of knowledge that should be provided by HEIs, apart from its relation with unemployment, is a precondition to any investigation about higher education and local development.

The main focus of the present work is to look for *best practice* around Europe which, for their conditions and characteristics, could be able to provide some lessons or ideas for the Italian case.

Being an action-oriented approach and an exploratory study about a real and complex phenomenon, the adoption of case studies seemed the most valuable methodology (Yin 1989).

Being developed in a business management department and in a faculty of economics with a long tradition in the study of districts (Becattini 1979; Bellandi 1982; Dei Ottati 1994; Lazzeretti and Storai 2000) this work adopts a very different point of view in respect to other similar higher education and regional development policy studies and Ph.d thesis (see for the British case Kitagawa 2003 and Potts 1998). Our main point of view and unit of analysis will be HEIs themselves and their linkages with regional and local actors, such as industries, regional development agencies and governments, and specific attention will be paid to HEIs' «corporate governance».

3. The state of the art

Investigation of HEIs' role in local development requires creating a bridge between regional development policy and higher education policy. As outlined by Keane and Allison (2000), the first workable framework of analysis to create such a link has been the concept of «learning region»[8] (Boekema *et al.* 2000; Morgan 1997; Florida 1995).

The role of HEIs in the knowledge-creation process has been developed in the literature in general terms (Gibbons *et al.* 1994; Dill 1995) and with specific reference to the regional economy (Rip 2002).

The academic literature, across different disciplinary fields, presents a huge variety of studies about the regional role of universities: with a theoretical approach (OECD 1982), across different nations (for instance Dahllöf and Selander 1994), with specific reference to some regions (for instance Dahllöf *et al.* 1998; Hölttä 1998; Krieger and Stratmann 1999), to entrepreneurship (for instance Williams 2003), to technology transfer (for instance Grant *et al.* 1996; Thomson 1998), about start-ups (for instance Di Gregorio and Shane 2003), with both qualitative and quantitative methods.

In a quite original article, Peter Vaessen and Martin van der Velde (2003) argues that «from a learning region point of view, university-society link-

[8] In a theoretical discussion about the concept, Hassink defines a learning region «as a regional innovation strategy in which a broad set of innovation-related regional actors are strongly but flexibly connected with each other, and who stick to a certain set of policy principles» (Hassink 2001: 226); it is a more restricted and demanding definition (focusing just on regional innovation policy) than the concept developed by Cook and Morgan (1998), which refers also to the general institutional endowments and social capital of a region.

age research has to focus on persistence in the relationship between the two rather than on incidental schemes like external research and consulting projects»[9]; it is original because it is just the opposite of what university-society linkage research has been doing (Branscomb 1999) and shifts research focus on «*recurring* external face-to-face contacts of individual university employees with organisations in the (local) environment»[10], considering leisure social participation of university employees next to their professional face-to-face contacts in the environment. They suggest, in fact, that the stream of academic knowledge filtering into the local community via indirect connections through the spare time social engagements of university workers may be considerable. The definition of knowledge we will adopt in chapter two will take this into account.

Marc Vermuelen's research (2003) goes in the same direction and is *de facto* in favour of non traditional concept of knowledge for HEIs aiming at promoting regional development, when it says that «having the right attitude is more important than having the required knowledge» and that «in this way, the role of education will also drastically change and the emphasis will shift from the qualification function (the training of specialists) to the selection function»[11]. The characteristics of future professionals that Vermuelen sees as most relevant for the regional economy are interaction, process interventions, communicative skills and «an open eye on the shop floor», and he suggests to relay on vocational education: colleges and other HEIs (practice), as they have more a tradition and better networks, could interact with universities (reflection) in order to educate valuable «reflextive practioner».

Nonetheless the current literature doesn't provide a comprehensive answer about the kind of knowledge that HEIs should produce in those peripheral regions which are characterised by an industrial base of SMEs involved in very traditional productions; what kind of governance structure they should adopt and which strategy. The present work, as an exploratory study, aims at being a first step for a contribution to that issue.

4. Structure of the thesis and methodology of research

Chapter two, taking the Italian case and the Italian National Bureau of Statistics' data about unemployment as a starting point, will develop: 1) an original conceptual and theoretical framework to address the problem of

[9] Vaessen P. and van der Velde M. (2003), *University knowledge transfer*, in Rutten R., Boekema F. and Kuijpers E. (2003) (eds.), *Economic geography of higher education*, Routledge, London, p. 89.
[10] *Ibid.*
[11] Vermuelen M. (2003), *Knowledge still travels on foot*, in Rutten R., Boekema F. and Kuijpers E. (eds.) (2003), *Economic geography of higher education*, Routledge, London, p. 79.

intellectual unemployment in the knowledge economy; 2) an «operationalised» definition of «knowledge» that goes beyond the classic epistemological dimension explicit/tacit knowledge (Nonaka and Takeuchi 1995), and is able to favour valuable interactions between HEIs and regions.

Chapter three will present the results of a case study about the University of Twente and its region. The choice of Twente was determined by the fact that the University was established *ex novo* in a peripheral and declining industrial area, focused around textile, and it proved to be a booster for the local economy. The university of Twente demonstrates that it is possible to achieve, starting from unfavourable conditions, poor resources and even in a short time, both local economic relevance and frontiers of science, provided that good management practices, strong entrepreneurial vision and will are effectively implemented in the institution.

Chapter four will present the results of a case study about the University of Cardiff and its region. The reasons for the choice of Cardiff are similar to the ones of Twente, being Cardiff a peripheral region in a once declining industrial area.

While Twente gave us the opportunity to critically assess management practices inside HEIs, Cardiff allowed us to conduct a quantitative measure of its regional and local economic impact and to review the tools available for this kind of studies.

Both the case studies were an opportunity to critically verify the conceptual framework developed in chapter two which, even if intended to explain intellectual unemployment in knowledge economies, allows us to suggest a broader definition of knowledge whose main consequences facilitate the consistency of higher education and regional development policy.

As far as methodology is concerned, chapter two is based on data from the Italian National Bureau of Statistics (ISTAT) and OECD (2002) and is eminently theoretical.

The case study developed in chapter three took great advantage of the time I spent with the people from the «Centre of Higher Education Policy Studies (CHEPS)» and the «Centre for Studies of Science Technology and Society» at the University of Twente itself, in March 2003, and in Maribor in July 2003 at CHEPS' summer school about the «Socio-economic role of higher education». The case study was mostly based on documents and materials I had the opportunity to collect at CHEPS' library and was supported by a few interviews of an open ended nature with local academic leaders, researchers and students. The study tried to read Twente's experience on the base of the most recent literature on higher education and regional development policy.

The case study developed in chapter four is based on my experience at the «Centre for Advanced Social Studies» (CAS) of the University of Cardiff in January 2003. The time spent in Cardiff allowed me to collect first hand documents and material about Caridiff University and its region, support-

ed too by a few interviews of an open-ended nature with academic personnel. The case study draws heavily from CAS's library and previous studies and would have been impossible without Philip Cooke's invaluable assistance and support.

Chapter five deals with the theme of «governance shifts» in higher education in an international perspective, both at the HEIs' «corporate level» and at macro-national level. Taking previous chapters as a base, its main objective is to identify and compare governance structures across different nations, looking for new paths, out of the «Humboltian tradition» and «Mode-1» Science, and able to guarantee both HEIs' regional economic relevance (and sustainability) and international scientific excellence. Chapter five would have been impossible without the assistance and advice Prof. Guy Neave (director of both CHEPS and the European Universities Association, EUA, at OECD) provided me with in Oslo, in August 2003.

As I have already made clear, the present «research» is intended to be a step towards the achieving of a practical social objective, that is to give a contribution to the solution of a living and present issue. In that sense, embracing a sincere «culture of research» as opposed to a «culture of science» (Latour 1998), it was not shy of taking some risks and enlarging the debate wherever it seemed relevant to: «science is certainty; research is uncertainty. Science is supposed to be cold, straight and detached; research is warm, involving and risky. Science puts an end to the vagaries of human disputes; research creates controversies. Science produces objectivity by escaping as much as possible from the shackles of ideology, passions and emotions; research feeds on all of those to render objects of inquiry familiar»[12]. But now it is reader's duty to decide if the risks we took were worth taking or even justified.

[12] Latour B. (1998), *From the world of science to the world of research?*, «Science», 280, pp. 208-209.

Chapter 1

Higher education and high intellectual unemployment: does education matter? An interpretation and some critical perspectives[1]

1. Globalisation and the knowledge driven economy

What is the nature of the link between «globalisation» and the so called «knowledge economy»? Why has globalisation made knowledge such an important ingredient for economic performance, according to widespread belief? In other words, is globalisation the cause of the great attention paid to knowledge and is this attention justified? We believe these questions have far less easy answers than expected.

In some ways, «globalisation» does not seem to be anything new in capitalistic economy. Wallerstein (Wallerstein 1974), building on the work of «dependency» theorists and the Annales of the school of French historiography, demonstrates that, since the sixteenth century, capitalism has been a global system, even if one of unequal exchange. Since 1492 very large movements of labour and capital have characterized the whole history of U.S.A., Canada and the Caribbean, and the nature itself of the colonization of the western territories by pioneers was a search for fertile agricultural soil to increase the production of tobacco, food and raw materials for European markets. In the 1800s the United States of America had a population of 5.3 million people. In 1870 this number had increased to 38.5 million and between 1890-1910 the immigration of labour force towards cities like New York, Baltimore, Boston reached a level of two million a year (Clough and Rapp 1975: 357). According to a recent report from «The Economist»[2], in the past decade the U.S.A. has

[1] A shorter version of this chapter has been published in Cooke P. and Piccaluga A. (2004) (ed.), *Regional Economies as Knowledge Laboratories*, Edward Elgar Publishers, Cheltnham, U.K., Northampton, USA, pp. 20-37.

[2] «The Economist» (August 24th 2002), *Special Report – Demography and the West*, «The Economist», p. 21.

taken in over 11 million immigrants. That compares with 6 million in the 1970s and 7 million in the 1980s. As far as the largest and most developed economy in the world is considered (and indeed, many, nowadays developed countries, from which this immigration was from), «globalisation» has not increased cross-national movements of labour force.

As showed by S.B. Clough and R.T. Rapp (Clough and Rapp 1975: 442), even cross national movements of capital reached a global dimension long before the «post-fordist era» and the «global economy». In an extremely original and well documented book, Geminello Alvi supports very persuasively the highly provocative thesis that the main socio-political events of the Twentieth Century, such as the Russian Revolution, the two World Wars and the final establishment of American supremacy, find their explanation in the movement of capitals and financial relations between the U.S.A., United Kingdom, France, Germany and Russia (Alvi 1996).

One would not go too far from the truth in saying that the U.S.A. and Canada are the «product» of global world trade economic forces, acting largely before anyone even started talking about «globalisation».

Even the technological innovations associated with the present «globalisation» do not seem to imply a much more dramatic increase in the possibility to move labour, capital or information than did electrical power, telegraph, telephone, radio or television during the past century. Present innovations, for the simple fact of being completely new, appear, in the eyes of contemporaries, as much more dramatic than «given for granted» innovations of the past but a careful historiographic investigation could reveal these beliefs at least exaggerated.

For sure the measurement of socio-economic effects of technological innovations deserve much more attention than this chapter can offer. What we want to suggest here is that there is no conclusive evidence that present innovations have changed the world economy and society much more than past innovations. The social benefit deriving from sending a telegraph from Paris to Berlin instead of riding a horse between the two cities with an envelope in one hand could be bigger than the social benefit deriving from establishing a videoconference instead of sending a telegraph.

In this sense we do not agree with M. Castells (Castells 1993) and Martin Carnoy's belief (Carnoy 1998), indeed quite representative of the dominant doctrine, that what is special about the «global economy» is that «strategic core activity, including innovation, finance and corporate management, function on a planetary scale in real time and that this globality became possible only recently because of the technological infrastructure provided by telecommunications, information systems, microelectronics machinery, and computer-based transportation» (Carnoy 1998: 21).

On the contrary, the innovations of the last two or three decades in high tech industry have been large and substantial in improving quality and speed of information provision. However, the fact is that they are not the

main point in explaining the current attention paid to knowledge and information as factors for improving economic growth. Therefore, we want to suggest that it is not recent high tech innovations that have made knowledge fundamental for economic performance.

Indeed it can be hypothesized that the high tech «revolution» has made information a far less important and strategic ingredient than in the past, because it is available much more quickly and cheaply, and for many more people than in the past; in many cases it is no longer a rare and inaccessible resource.

The current importance paid to knowledge and information derives not from high tech innovations but from some structural changes in the composition of the world economy that provoked a major change in the «general view».

Before analysing these structural changes and their implications for the «knowledge economy» doctrine, it is necessary to clarify what we mean by «knowledge» and «information».

2. Knowledge and information

According to rationalist epistemology there is a definitional difference between «knowledge» and «information». «Knowledge» is what an individual receiving a message already has and what changes as a result of receiving information. «Information» is the message that is transferred. So, *strictu sensu*, rationalist epistemology assumes that only information can be transferred, knowledge being something belonging to the individualistic sphere. What makes this difference almost irrelevant in the rationalist tradition, at least from a practical point of view, is that, as a rule, all knowledge can be translated into information.

The Cartesian tradition assumes, in fact, a dualism between an objective world of physical reality and a subjective mental world of an individual. Rationalist thinking can either reduce the physical reality to mental states and processes («idealism») or reduce the mental world to physical states and processes («materialism»). In both cases *knowledge* is a collection of representations that can be translated into language, *thinking* is their manipulation process and *communication* is the transfer of *information* (Lakoff 1987). Language and sentences can deliver a representation of the world that can be true or false, coherent or not coherent, but their ultimate grounding is in their *correspondence* with the state of affairs they represent (Winograd and Flores 1986). It is the *correspondence theorem*, between representation and physical reality, *that* allows in principle that all knowledge can be translated into information.

The consequence for mainstream economic growth theory, as expressed for example in Romer's endogenous growth model (Romer 1986), is that

growth stands for the accumulation of codified objective knowledge. The rationalist epistemology and the *correspondence theorem* means Romer assume that «knowledge» is like a blueprint that has a separate existence from that of any individual. According to this doctrine, the enormous accumulation of information (and so knowledge), allowed by recent high tech innovations, provides a major and historically unprecedented boost to productivity and economic growth. Romer argues, correctly, that in the long run economic growth is a function of knowledge but we neither agree with Romer's definition of knowledge nor with his view about the high tech role in accumulating it.

The concept of knowledge developed in the self-organizing approach (Maturana 1986), as well described by Robert A. Te Velde (Te Velde 1999), is much more useful in explaining the relation between knowledge and economic growth and the possible impact of high tech innovations.

In 1968, Maturana's neurophysical research on colour vision showed that physical reality had only a triggering role in the generation of the colour space of the observer (Maturana and Varela 1986): the nervous system acts as a generator of phenomena, rather than as a filter in mapping of reality. Living systems live in their own mental world, that is, they refer to some 'external' environment (a system at a higher scale) that they have created themselves, as in Heisenberg's phenomenological theorem where the interpreted and the interpreter do not exist independently (Te Velde 1999: 5). According to Maturana's view the main feature of living systems is *autopoiesis* («self-creation»). They are opened to information but closed to knowledge, which is rooted in personal history, personal features, and previous knowledge. The main difference with 'idealism' is that the *correspondence theorem* is not true anymore.

But if the *correspondence theorem* is not true and we live in a world of *autopoietic* systems in which each one is just a source of perturbation to the others or, in other words, we have a different world for each single *autopoietic* system, how is it possible that we have valuable interactions? Maturana speaks of 'structural coupling' or mutual co-adaptation of two independent systems. «An autopoietic system will by necessity evolve in such a way that its activities are properly coupled to its medium. Its structure must change so that it generates appropriate changes of state triggered by specific perturbing changes in its medium; otherwise it will disintegrate – it dies. The structural coupling generated by the demands of autopoiesis plays the role that the rationalistic tradition naively attributes to having a representation of the world» (Winograd and Flores 1986). So two agents interacting repeatedly with each other might become structurally coupled. «Structural coupling occurs when the agents develop behaviours that reciprocally trigger complementary behaviours. As a result, their actions become coordinated so as to contribute to the continued autopoiesis of each other […]. These interlocked patterns of behaviour form the so-called *consensual*

domains» (Te Velde 1999: 5). Maturana refers to behaviour in a *consensual domain* as *linguistic behaviour* when the nervous system has developed in such a way that it can interact with its own symbolic descriptions we have *language.* The main function of language is not the transmission of information about an external physical reality but the establishment and consolidation of a *consensual domain* through continuous interaction with other autopoietic systems. Agents are not in a physical reality but in a *consensual domain*: «reality only exists within a consensual domain and is a construct of the agents within that domain. Reality is therefore neither objective nor individual but essentially social in nature»[3].

3. Knowledge as ability to generate effective action

On the one hand, these epistemological premises imply that «information» cannot be translated into «knowledge» by the simple use of a codified language, and knowledge is no more a storable good that can be accumulated. On the other hand, «knowledge» is always associated with action: you cannot attain knowledge without concrete, specified cognitive processes operating on experiences obtained through concrete interactions between agents (Arthur, Duralauf and Lane 1997). Already established consensual domains allow meaningful interactions and co-ordinated actions between agents. Moreover, the point is that the consensual domain is always local and social in nature. The individual possibility to attain knowledge is strictly linked to the social system and consensual domains in which one acts, whether this be a department, a firm, a local system or a region.

The difference between information and knowledge becomes sharp. Information is an amount of symbolic descriptions produced by individuals, which is storable and can exist by itself: it is an evolution of the behaviour in a *consensual domain,* in which individuals can interact with their own symbolic descriptions. We called this evolved behaviour as *linguistic behaviour.* The main function of information and language is to improve

[3] Te Velde A. Robert (1999), p. 6. See also, for a fundamental critique on the autopoietic model Roth G. and Schwegler H. (1990), *Self-Organizing and the unity of the world*; in Krohn W., Kuppers G. and Nowotny H. (1990), *Selforganization: Portrait of a scientific revolution*, Kluwer Academic Press, Dordrecht. We may summarize the main difference between «autopoiesis» and «rationalistic thinking» as follows. Rationalist thinking has two forms; it can either reduce the physical reality to mental states and processes («idealism») or reduce the mental world to physical states and processes («materialism»). In both cases the «correspondence theorem», between representation and physical reality, is true and language and sentences can deliver a representation of the world that can be true or false, coherent or not coherent, but their ultimate grounding is in their correspondence with the state of affairs they represent. On the opposite, «autopoiesis» assumes that the «correspondence theorem» is not true any more: «physical reality» becomes a product of social interactions among individuals and so a «consensual domain».

interactions between individuals and through interactions, knowledge. There is no direct link between the accumulation of information and the increase of knowledge. Knowledge does not exist by itself but only inside a community of individuals and is continually regenerated and made existent through linguistic and non-linguistic activity, and the structural coupling generated by that activity. Breakdowns may occur at any moment at the individual as at the social level. This brings us very far from the neoclassic growth model, in which knowledge is individually and steadily accumulated, almost like a sort of capital. Knowledge becomes a very fragile social product, inseparable by the evolutionary process of actions and interactions inside a «local» community of individuals.

If we assume this concept of knowledge it is at least doubtful that the new technologies made knowledge more important than it was in the past, or even that they significantly enhanced the exchange of knowledge between people.

The adoption of information technology might greatly improve the transfer of information but the critical elements of the «converter» role are the human specific qualities to deal with breakdowns and to create consensual domains (Brown and Duguid 1998). These technologies could play a role in the coordination of action but are at best a supplement to the delicate and complicated processes of inter human communication. If the share of non-substitutable informal communication is high, the introduction of information technologies could even damage the existing communication processes and patterns. As well understood by Robert A. Te Velde «what marks the rise of a *knowledge society* is the fact that economic value is explicitly attributed to the ability to generate effective action. Effective linguistic behaviour and good language skills are the cornerstones of such a *knowledge society*, not massive databases and 'intelligent' expert systems» (Te Velde 1999: 8).

4. The cultural shift from physical assets to knowledge

So, if it is not information technology that made «knowledge» (as ability to generate effective action) so important in the present economy, what did produce such a major shift in the western interpretation of economic growth, paying much more attention to knowledge in respect to tangible assets? The confusion between information and knowledge and the consequent consideration of a database as accumulated knowledge, certainly paid a role in focusing so much academic and political attention on the supposedly amazing potential of information technology in increasing knowledge.

In a sense, according to our new definition, as «ability to generate effective action», knowledge has always been the major ingredient of economic growth. In a fascinating and original book on the nature and history of

capitalism (Alvi 1989), on chapter II, *L'economia come pensiero*, Geminello Alvi catches the point well. He shows that the major ingredient of economic growth, in its capitalistic form, is and has always been a state of mind, a kind of thought able to produce «precise and widespread computational skills, orderly and prolonged management of production, obsessive tenacity in innovation» (Alvi 1989: 47). It is very similar to our definition of knowledge as «ability to generate effective action».

Nonetheless, we agree that knowledge has become a more and more important «raw material» in the past two or three decades. Here follows our «non IT» explanation.

First, after World War Two reconstruction and satisfaction of basic needs through mass standardized production, economic activity in the major industrialized countries shifted from material goods to services and information-processing activity. In the decade 1949-1959, the percentage of GNP deriving from the service sector was: 41.6% for the USA, 36% for the UK, 33.9% for France, 30.7% for West Germany and 26.7% for Italy (UN, 1964, p. 51). In the year 2002 these percentages have modified as follows: 76.9% for the USA, 73.4% for the UK, 68.5% for Germany, 71.6% for France and 66.4% for Italy[4]. The percentage has more than doubled everywhere, with the exception of the USA, where it «almost» doubled because of the already advanced starting point in respect to the other countries. It is an extremely large increase for services and damage for the industrial sector. Nowadays the service sector employs the following percentages of the labour force: 73% for the USA, 71% for the UK, 60% for Germany, 69% for France and 61% for Italy[5]. In the decade 1949-1959, the same percentages were as follows: 50.6% for the USA, 38.2% for the UK, 29.2% for West Germany, 32.4% for France and 25.1% for Italy (UN 1964). Services, involving in general a much higher level of interaction between human beings, require more complex consensual domains, language skills and abilities to overcome breakdowns in relations: so, higher levels of knowledge are needed.

Second, changes from mass standardized production to flexible customized production, and from vertically integrated large firms to vertically disintegrated, networks between small-medium firms and clusters of firms, have produced a «spreading of knowledge» from the centre to the outskirts. Analysing the reasons for this change in production would bring us too far from our purposes but, for certain, this new structure requires a much larger diffusion of knowledge between a much greater number of economic agents than does vertical integration (Lorenzoni 1990).

Third, economic activity, in industry, agriculture and services, is increasingly science-based. As we saw in previous sections, behaviour in a *consensual domain* is a *linguistic behaviour* when the nervous system has developed in

[4] «The Economist» (2002), *Pocket World in Figures*, 2002 Edition.
[5] *Ibid.*

such a way that it can interact with its own symbolic descriptions (*language*). Development has gone so far and scientific language has proved so useful in economic activity that this knowledge is now extremely complex and must be provided to everyone through that special social activity that we call education and training. Certain levels of education and training prove unavoidable in providing every kind of knowledge but it is in science that they seem to be more effective. Science and knowledge in general have long been important for economic growth but as economies evolved and became more complex, under increasing competition, they became critical, together with the activity of education and training to provide them.

Fourth, increased global competition, initially between the USA and Japan, especially during the 1980s, gave clear evidence of the importance of «knowledge». During the 1980s the fear that Japan could overcome the United States in international competition even produced new research to understand the roots of Japan's competitive advantage. How could a small nation like Japan, devoid of resources, political influence and military strength, achieve super economic status rivalling and surpassing, in some instances, the most powerful, richly endowed nations in the world? This research started to highlight the new importance of «knowledge» in the competitive advantage of a nation.

What is special about Japan is that its thought never experienced the western and Cartesian dichotomy between mind and physical reality that we discussed extensively in previous sections. As well explained by Nonaka and Takeuchi, the «Japanese have a tendency to stay in their own world of experience without appealing to any abstract or metaphysical theory in order to determine the relationship between human thought and nature. Such a basic attitude of the *oneness of human and nature* is one of the most important characteristics of the Japanese intellectual tradition» (Nonaka and Takeuchi 1995: 29). Japan never experienced the western separation of body and mind, too, according to which personal knowledge is something distinct and separated from other personal experiences (such as emotional ones) and physical experiences. The *oneness of body and mind*, developed in Zen Buddhist culture, made personal and physical experience more important than intellectual abstraction and indirect experience: «*Samurai* education placed a great emphasis on building up character and attached little importance to prudence, intelligence and metaphysics. Being a "man of action" was considered more important than mastering philosophy and literature, although these subjects constituted a major part of the samurai's intellectual education» (Nonaka and Takeuchi 1995: 29). According to Kitaro Nishida, probably Japan's first theoretical philosopher, true knowledge cannot be obtained by theoretical thinking but only through one's total mind and body (Yuasa 1987). The last major characteristic of Japan's philosophical tradition comes almost as a consequence from the first two, the *oneness of self and other*: in western countries the goal is to promote the

freedom, welfare and self-realization of the individual self, whereas «for the Japanese, to work for others means to work for oneself. The natural tendency for the Japanese is to realize themselves in their relationship to others» (Nonaka and Takeuchi 1995: 31).

If we recall our definition of «knowledge» as the ability to do something in a *consensual domain* nurtured ad sustained through continuous social interactions, we realize that the three philosophical pillars of the Japanese tradition, *oneness of human and nature*, *oneness of body and mind*, *oneness of self and other* have produced a much more modern concept of «knowledge» than the West.

Many observers agree in considering this «knowledge» to be the key of Japan's success. Nonaka and Takeuchi hold that the success of Japanese companies is not due to their manufacturing prowess; access to cheap capital; close and cooperative relationships with customers, suppliers, and government agencies; or lifetime employment, seniority systems and other human resources management practices – although they consider all these factors to be important. Instead, they make the claim that Japanese companies have been successful because of their skills and expertise at «organizational knowledge creation». By this they mean the capability of a company as a whole to create new knowledge, disseminate it through the organization, and embody it in products, services and systems. Organizational knowledge creation therefore becomes the key to the distinctive ways that Japanese companies innovate.

The great economic performance of Japan in the 1980s brought to western countries much attention to and understanding of concepts like *learning by doing*, *organizational knowledge creation*, *knowledge-creating company.* It became evident that the old idea of «knowledge» as something that can be completely and individually acquired, taught, and trained through manuals, books, or lectures, was not correct. A new concept of «knowledge» took centre stage. It was not a fashion idea created by Japan's contingent economic performance, because it has well outlived Japan's prolonged crisis starting in 1990. On the contrary, the claim has enormously increased its force. The «discovery of Japan» produced a lasting epistemological updating of the western concept of «knowledge», between managers, policy makers, scholars and even public opinion at large.

As we will see later on, the problem is that in many countries, such as Italy and even Japan itself, this newly discovered concept of «knowledge» did not extend to the management and teaching methods of higher education.

5. Knowledge and education

The increasing importance of knowledge produced, as a consequence, an increasing importance of education in policy making, because of the

high level of complexity reached by *linguistic behaviour*. In addition, the old western concept of «knowledge» was a major boost for formal education and training policies, both at the national and international level.

We can see this evolution through the policy of the World Bank, an institution that more than others seems to reflect the «western view» of the world (Jones 1997). According to the Bank, investment in education «contributes to the accumulation of human capital, which is essential for higher incomes and sustained economic growth», and more generally it «helps strengthen civil institutions and build national capacity and good governance-critical elements in the implementation of sound economic and social policies» (World Bank 1995: 1-2). Between 1947 and 1962 the World Bank had no education portfolio. In 1960, $659 million was provided in thirty-one loans to twenty-one countries, eighteen in the developing world. Nearly one-third of available finance went each to power (31%) and transport (29%), followed by mining and pipeline construction (18%), agriculture (10%), steel (7%) and industry (5%). The cumulative total lending between 1947 and 1960 ($5.068 million lent, to fifty-three countries, through 265 loans) has a similar distribution: electric power (32%), transportation (30%), industry (16%), European reconstruction (10%), agriculture (7%), communications (0,5%), general development purposes (4%) (Jones 1992: 29).

The World Bank only took the decision to establish an education portfolio in 1962, and made its first loan for education in 1963. Since 1980 the total volume of lending for education has tripled, and its share in overall Bank lending has doubled (World Bank 1995: 14). In addition, the quality of funding for education became increasingly focused on educational inputs and intangibles, more than on buildings and goods, and today the Bank is the largest single source of external financing for education in developing countries. Even if the Bank is giving increasing importance to primary and secondary education, because of its main focus on developing countries, it is extensively involved in higher education for half its education budget: «Bank lending for higher education will support countries' efforts to adopt policy reforms that will allow the sub sector to operate more efficiently and at lower public cost. Countries prepared to adopt a higher education policy framework that stresses a differentiated institutional structure and diversified resource base, with greater emphasis on private providers and private funding, will continue to receive priority» (World Bank 1995: 16). The increasing importance of education and higher education policies has not been limited to the international level. As far as the policies of single western countries are concerned, both at the national[6] and regional[7] level,

[6] See for an extensive treatment Slaughter S. (1998), *National higher education policies in a global economy,* in J. Currie and Newson J. (1998) *Universities and globalization: critical perspectives*, Sage, London, pp. 45-70.

[7] See for an extensive treatment Cooke P. and Morgan K. (1998), *The associational economy*,

higher education has received increasing financial, legislative and «associative» efforts (Cooke and Morgan 1998).

The problem is that education and higher education are not enough to produce economic growth and, in their traditional methods, they are not enough to produce even «knowledge», according to our new definition of knowledge. In the Republic of Georgia, for example (population 5.4 million, number 139 in the world in GDP per inhabitant at purchasing-power parity, number 16 in the world in unemployment rate), half of school leavers now go straight into higher education and another third enter tertiary vocational training (largely as a possible back door into university); since 1991 over 200 new degree-offering institutions have sprung into life alongside the old state university (Wolf 2002). With half the registered adult unemployed holding degrees, Georgia is a living example that education is, at least, not enough to produce economic growth.

6. Higher education and high intellectual unemployment

What is surprising in this entire scenario is that even some western countries, like Italy, experienced the highest level of unemployment between young and highly educated individuals. So, on the one hand, national and regional governments are making so much effort to improve higher education, on the basis that «knowledge» is the key for economic growth. On the other hand, these highly educated individuals seem to be the most affected by unemployment. There is also a great need for workers for positions that require a very low level of education, as immigration flows from poor countries and requests for more immigration by firms suggest. The following data for the Italian case are from the National Institute of Statistics (ISTAT 2001), for individuals from 25 to 34 years old:

Table 1. Unemployment rates for geographic areas and qualifications. Year 2001

	North-West	North-East	Centre	South
Degree and doctorate	5.6	7.9	14.1	28.0
High School	3.8	3.6	9.8	27.3
Professional training	4.1	3.2	8.3	26.6
Secondary school	5.9	4.0	10.5	24.7
Primary or no school at all	11.1	5.8	14.5	35.6
Total	5.0	4.3	10.6	26.8

According to these official data, from the Italian National Institute of Statistics (ISTAT), in every Italian region, people with a high school diploma or even just professional training have a better chance of getting a job than people with a university degree, assuming they are from 25 to 34 years old.

In Central Italy, the level of unemployment amongst young people with primary or no schooling is practically the same as that among individuals with university degrees (14.1% and 14.5% respectively). According to an investigation by the Marche Region (1998), «the difficulties of young Italian individuals with high qualifications to enter into the labour market are great revealed both in the long time that is needed to get a job (in 1993 individuals looking for a job for more than 12 months were 59.4%, in 1996 they increased to 66.4%), that is often disappointing and unstable»[8].

Even if, according to Italian National Institute of Statistics (ISTAT), the scenario improves analysing data for individuals from 34 to 64, that is really a very small consolation for the «young» generation of a «knowledge economy».

Italy has the lowest «comprehensive private internal rate of return to tertiary education», for males, among OECD countries: 6.5% (Italian data for females is not available).

Table 2. Comprehensive private internal rate of return to tertiary education.

United Kingdom	17.3%
United States	14.9 %
Denmark	13.9%
France	12.2%
The Netherlands	12%
Sweden	11.4%
Italy	6.5 %
OECD country mean	11.8%

OECD countries 2002, males

The rate of return represents a measure of returns obtained, over time, relative to the cost of the initial investment in education (the costs equal tuition fees, foregone earnings net of taxes adjusted for the probability of being in employment less the resources made available to students in the form of grants and loans; benefits are the gain in post-taxes earnings ad-

[8] Organismo Bilaterale Marche (1998), *Disoccupazione, offerta di lavoro giovanile e domanda di professionalità delle imprese nelle Marche*, A. Merloni Foundation on behalf of Regione Marche, p. 51.

justed for higher employment probability less the repayment, if any, of public support during the period of study) (OECD 2002: 126-134).

Italy's «expenditure on instruction, research and development (R&D) and ancillary services in tertiary education institutions as a percentage of GDP» is 0.83%, the lowest among OECD countries. It is 1.03% for Turkey, 1.11% for Mexico, 1.07% for Hungary, 1.10% for Spain, 1.07% for the United Kingdom, 1.13% for France, 1.06% for Germany; country mean is 1.32% (OECD 2002: 207). Only Mexico, Poland, Korea and Slovak Republic among the thirty OECD countries have a lower level than Italy of foreign students enrolled (OECD 2002: 236).

It is well known that employment-to-population ratios among young adults who are not in education provide information on the effectiveness of transition frameworks. Employment-to-population ratios for 20 to 24-years-olds generally exceeds 70 per cent with the exception of some OECD countries such as Greece, Italy, Poland and Turkey. For 25 to 29 age group, most OECD countries have ratios of between 70 to 80 percent, with the exception, again, of Greece, Italy, Poland and Turkey (OECD 2002: 255).

According to OECD data, «in a few OECD countries, even young people who have completed tertiary-level education, probably a first degree given the age band involved, are subject to considerable unemployment when they enter the labour market. The ratio of unemployed non-students to the total youth population among this age group is up to 16 per cent or more in Greece, Italy, the Slovak Republic and Turkey, and higher than 13 per cent for 25 to 29-years-old in Greece and Italy» (OECD 2002: 257). Country mean among the thirty countries joining OECD is 5.2% for 20 to 24 age group and 3.9% for 25 to 29-years-olds. Moreover, by comparing work status for 20 to 24 age group, Italy shows a remarkably small gap (in comparison to other OECD countries and country mean) between those who have obtained upper secondary education and above and those who have not. These data for Italy, especially the ones from ISTAT, are so abnormal as to require a critical analysis.

Certainly, much could be done to improve legislation and coordination between the higher education system and firms. However, we believe that *the* main cause of these numbers, at least in the Italian case, is a fundamental contradiction in the educational system. This logical contradiction can be summarized as follows: we make the claim that relying on the traditional western concept of «knowledge», as we explained it in the previous sections, the Italian system of higher education was built to provide higher education as a «positional good», and to provide it to as many as possible. This claim requires a full explanation.

The political economy of education markets classifies two broad types of commodity produced in education: *student goods* and *knowledge goods.* Student goods are what acquired by students during their course of study. Knowledge goods are tradable intellectual property, such as copyrighted

books, research data, patented scientific discoveries. Student goods divide into *self-goods* and *training goods*. Self-goods are purchased by the student or her family in order to enhance attributes of that student. Training goods are purchased by employers in order to enhance the value creating skills of their employees. Self-goods are further divided into *positional goods*, which are status goods that provide social advantage, and *other goods of self-improvement*.

In the United States, Japan and most industrialized countries, the most desired forms of positional goods are places in élite schools and the professional faculties of leading universities. In Japan it is normal that a high school student would attend an expensive evening school to prepare admission examinations to prestigious universities, and it is not so rare that a student would spend some years, after ending high school, just in the effort to be admitted to the University of Tokyo, Faculty of Law. Admittance to this or other élite schools means a high probability to achieve the highest and best-paid positions in public administration and private corporations (Dore 1965). The struggle between students to get a degree from prestigious institutions is no less intense in the United States (Duke 1986).

What is special about Japan, in particular, is that its tradition and philosophy developed a concept of knowledge very similar to our new definition of «knowledge» and its most innovative firms pioneered the introduction of this new knowledge into production (as well described by Ikujiro Nonaka and Hirotaka Takeuchi in *The knowledge-creating company*), whereas its educational system has remained stuck to the traditional western concept of knowledge. The reason is that the Japanese educational system has always been a western one in its main framework. When Japan underwent the catch-up phase of its historical development, that was a political choice of imitation of western models by the central government (Duke 1986). During the USA military occupation a strong western policy for education was enforced (Hall 1949). So, today, this ancient western origin of the educational system is well established in the own Japanese tradition of higher education (Duke 1986). In our opinion, the fact that firms were not managed by the government, as education was, allowed them to preserve the concept of «knowledge» typical of the Japanese tradition.

Coming back to «positional goods», the problem about them, in education as elsewhere, is that they are *hierarchical* in character (by definition some are more valuable than others). They are not just «scarce», like all economic commodities, but *scarce in absolute terms,* in the sense that total supply is fixed. According to Marginson (Marginson 1997: 27-50), positions of social leadership are finite and cannot be expanded through changes in education; and there cannot be universal or equal access to such positions, except when education has no positional value. In Hirsch's words, «positional competition, in the language of game theory, is a zero-sum game:

what winners win, losers lose» (Hirsch 1976: 52), and when the number of educated people with a given level of credentials increases, the value of these credentials must decline. Education may provide knowledge, skills and social experiences without limitations, but as long as it is employed as a screening device for social positions «advance for everyone» is an illusion: «At any moment in time, and for any one person, standing on tiptoe gives a better view, or at least prevents a worse one. Equally, getting ahead of the crowd is an effective and feasible means of improving one's welfare, a means available to any one individual. It yields a benefit, in this sense, and the measure of the benefit is what individuals pay to secure it. The individual benefit from the isolated action is clear-cut. The sum of the benefits of all the actions taken together is nonetheless zero» (Hirsch 1976: 7). This phenomenon, even if obvious as it appears, is very tricky for neoclassical tools and methodological individualism as they tend to miss the interdependence between individuals and the negative externalities resulting from education: as a consequence, the full costs of education may be underestimated. The methodological individualist assumes, in fact, the social good is the arithmetical aggregate of all of the individual goods. But, as we can see, this methodology lacks any sense for individual benefits of positional investment in education.

The big difference between Italy and, for example, Japan and the United States concerns positional goods. In Italy places and degrees in prestigious universities are almost irrelevant because of extremely egalitarian policies between universities: the result being that a simple and ordinary degree is the main positional good available in education.

The importance that the labour market has traditionally paid to degrees from different Italian universities is not comparable to the importance that is paid in Japan or the United States. Some Italian universities are better than others but the traditional social screening devices (apart from non academic ones that have always paid a major role in Italy, such as wealth and parents' education) have always been the level of qualification (primary, secondary, university) more than the universities where they have been obtained. As proof of that, until a very few years ago there was free access to almost every Italian public university to every Italian student holding any high school diploma or professional training whatsoever; exceptions were so few to be almost irrelevant.

The effect of this policy was that the positional good «university degree» lost much of its «positional rent», with all of the typical consequences that the political economy of education suggests:

1. individual investment in education falls short of expectations;
2. «credentialism»: the growth of educational credentials reduces the positional information conveyed by each credential and individuals look for more credentials;

3. the employer intensifies the screening process, raising the required level of credentials and forcing ever higher levels of investment in education;
4. professional groups require increasing levels of qualification to enter into the profession;
5. «the race gets longer for the same prize»
6. education becomes a «defensive necessity»;
7. as living standards rise, more people can invest in positional goods, and positional competition is intensified, especially during economic stagnation when the scramble for the remaining positional goods increases;
8. the value of positional goods falls and their price rises;
9. individuals suffer disappointment, frustration and «deadweight» social costs.

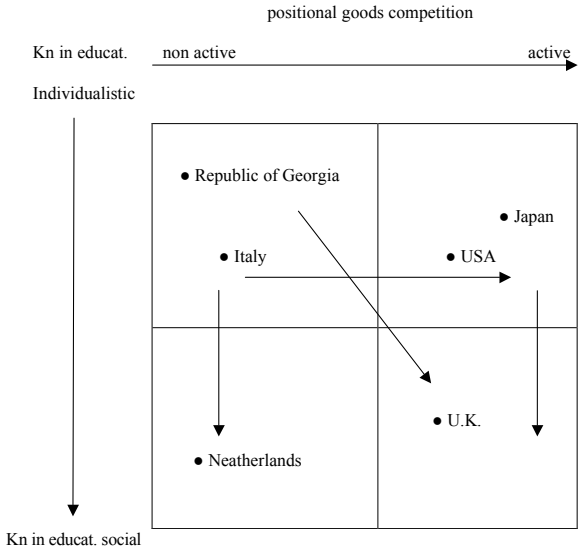
The logical contradiction implied by a policy whose objective is to provide the same positional good to everyone, combined with a concept of knowledge provided by the educational system, that is merely instrumental to positional competition and far from the needs of production and society, result in a high level of unemployment and dissatisfaction among highly educated people.

Here are two possible, not mutually exclusive, ways out for the Italian and similar cases:

1. Assuming that positional goods are probably the most important goods produced in the educational market, the higher education system should reject any utopian purpose of egalitarianism and, once it is aware of the characteristics and limits of positional goods, introduce a hierarchy between universities, making the system coherent with the existence of positional goods. Shifting positional goods competition from levels of qualifications to universities would allow a modern and widespread policy for higher education without its present logical contradiction.
2. Remove the old western concept of «knowledge» as information that can be indefinitely and individualistically accumulated without action, and introduce in the educational system the concept of knowledge we defined in previous sections. This new concept, if not able by itself to reduce the positional value of education, would imply a closer relation between formal education, action, interactions with other individuals, local community and work, and would avoid a mere production of positional goods. This «new knowledge» is not just instrumental to positional competition but also useful to economic activity and society. In this new circumstance, if positional competition goes wrong due to logical contradictions in policy or for some other reason, the result is not «a

positional good, *education*, that doesn't have a position any more» (and is so valueless on the labour market) but a creation of knowledge that is economically valuable. Indeed, this «new knowledge» does not need a positional framework at all.

Fig. 1. The conceptual framework



That second solution seems to be the most interesting as it would reduce the socially expensive zero-sum game for positional goods, and would produce a kind of knowledge and education more respondent to the needs of modern firms. Its democratic and more egalitarian nature is a plus. The figure on previous page synthesizes the conceptual framework and the two possible policies.

On the vertical axis is the kind of knowledge that the educational system provides: «traditional/individualistic» (at the top) or «social» (at the bottom) according to our definitions. On the horizontal axis is the degree of positional competition: «non active» on the left (because of logical incoherence in the system, like in Italy, or because not intended, like in the Netherlands), active on the right.

The square up on the left is the only one, according to our definitions, that produces a high level of unemployment among highly educated people. The arrows going out of this square indicates the two, not mutually exclusive, policies to solve the problem. Even if the collocation of countries on the figure is only an example to clarify the conceptual framework, the UK may well be a case in which both the policies are active.

If we accept the epistemological view of the previous sections and agree:

1. on a definition of «knowledge» as ability to produce effective action in a social context;
2. that the educational system must help in producing this kind of «knowledge»;
3. that knowledge is the key factor in economic growth;
4. that in the present economy the most widely requested form of knowledge are individual competences such as *problem* solving, relational skills, professional communication, team work and cooperation; then we understand why firms pay increasingly less attention to positional goods such as university degrees, obtained through individualistic accumulation of «traditional knowledge», and pay increasing attention to expensive psychometric tests (Jenkins 1976).

It is also possible to argue that a coherent system of «positional goods competition» could work more effectively when the major employers are large firms. In this case, because of the great asymmetries in information between employer and possible employee, firms could be compelled to rely more heavily on educational «credentials». When firms are very small, or on a family base, and embedded in a local network of relations based on trust, which reduces asymmetric information, such as is found in typical industrial districts of Central Italy, even a coherent system of «positional goods competition» could not work, let alone the incoherent one that seems to exist just now.

The problem of eliminating the «mismatch» between present academic knowledge and knowledge requested by firms is too great to be treated here and would require a complex system of policy measures such as:

1. shifting from a passive to an «active» way of teaching (Leoni and Mazzoni 2002), to develop the newly requested competencies and link the concept of knowledge to the concept of «ability to produce effective action in a social context»;
2. introducing «stages» and partnerships to allow firms and students to know and interact repeatedly with each other through project-based working, so that they may become structurally coupled, remembering that «structural coupling occurs when the agents develop behaviours that reciprocally trigger complementary behaviours. As a result, their actions become coordinated so as to contribute to the continued autopoiesis of each other» (Te Velde 1999) and would build their relation on effective interaction, more than through «credentialism» and socially expensive «positional goods competition»;
3. reforming universities' funding structure to promote devolution and a development of knowledge not just «publishable» but that is linked to

the surrounding social community, according to our concept of «knowledge» as a «social behaviour»: «the concentration of effort in achieving published research […] can result in high opportunity costs in terms of the contributions institutions can make to local economic development. There is a need to modify the funding system, so that both the contribution universities are making […] to social reproduction, social capital and social inclusion, and the potential they have for applied research, are recognized and encouraged» (Morgan 2002: 68).

7. Conclusion

This chapter does not seek to propose a general policy framework, that is far beyond our present objective. What we do want is to show that every effective policy framework for filling the «mismatch» between higher education and the real economy requires embracing a new concept of «knowledge», as outlined in previous sections.

This concept, well developed from a philosophical point of view, is not yet ordinarily held in the educational systems of industrialized countries. Its adoption would help in explaining phenomena like high unemployment among highly educated people and would have highly social implications for local communities.

It would contribute to avoiding the *global auction* for investment, technology and jobs operating like a «Dutch auction» (Brown and Lauder 1998: 173), in which corporate investors are able to play off nations, communities, and workers as a way of increasing their profit margins, and downward bidding spirals, impoverishing local communities and workers by forcing concessions on wage-levels, rents and taxes in exchange for investment in local jobs.

If the higher education system is, in fact, going to provide this new form of knowledge, together and in full coordination with surrounding communities, instead of involving itself in the expensive and deteriorating fight for positional goods, systems would no longer have an excess of highly educated people, nor would they have the more subtle and invisible general downsizing in positional competition. People would gradually and mentally involve themselves, during and inside their university courses, with the economic activities carried on in the communities in which they live, and would not just present themselves one day on the market, to sell the educational positional goods that they have laboriously obtained through individualistic accumulation of «knowledge».

We should probably go back to the classics and the founding father of the socio-economic concept of «industrial district», Alfred Marshall, who had a very different view from the following mechanical and formalized neo-classical tradition: his «educational principles transcend the school-

room and highlight the need to ensure young people have contact with real life quite early, when their mental elasticity is greater. There is more to learn in the workshop than in technical schools, where «imitation has to yield the first place to formal instruction» (Marshall, *Industry and Trade*, 1919: 351). Education is also a process of socialization, in which «sympathies» are developed by personal contacts «on the river and in the football field» (Marshall 1919: 822-823)»[9].

That is probably the best answer to «the new international division of labour» (Carnoy 1995: 211-217) for industrial districts and local communities: to invest in education to develop this new «social knowledge», in order to accelerate the evolution of their own social environment, because «reality is therefore neither objective nor individual but essentially social in nature» (Te Velde 1999). The world would be no more «a representation of mine» (Schopenhauer 1819), rather it would be «a creation of us» as social community.

[9] In Tiziano Raffaelli (2003), *Marshall's Evolutionary Economics*, Routledge, London, p. 64.

Chapter 2

Management practices and entrepreneurship: the case of the University of Twente[1]

1. Introduction

«Quality» has become an important issue in the higher education debate and it is neither because there was no «quality» and its assessment criteria in academia before nor because time has come for universities to learn the «secrets» of quality from the much more advanced management practices of enterprises. According to Guy Neave (1994), in fact, quality has been the central item in the affairs of Europe's universities since the time of their foundation and what has altered – and that, most significantly – has been the ultimate authority which endowed individual institutions with the mission of certifying the levels of attainment and with the obligation to furnish students with knowledge on which their performance and attainment were assessed. The first authority to confer such a mission, dating back from medieval times, was the pontifical one in the right to grant the *licentia ubique docendi* (Durand-Prinborgne 1992). The second step was the subsequent passing of such authority from the Pope to the Prince.

In the following centuries, the need to create a modern bureaucracy, drawing its recruits through competitive and standardised examinations, developed the «modern university» as we have known it during the entire 20th century. The State developed «quality assurance» systems, fixed the contents of subjects, the number and combinations of subjects and very often the numbers of lectures to be held in order to be eligible to sit the civil service examination.

[1] A shorter and revised version of this chapter has been published in «European Planning Studies», Vol. 13, n. 3, April 2005, pp. 475-493.

Even «total quality management», correctly seen as a major innovation in fordist industry, in point of fact has long existed in higher education in the shape of «collegial decision making» (Neave 1994).

Outlining a cross-national history of higher education «quality assurance» systems would bring us too far and it's not the objective of this chapter. What we want to argue here is that «quality» has been a central item through the entire history of universities and that it was a response to the demands of a modernising state.

On the opposite, the emergence of present-day quality assurance mechanisms in higher education has a very different origin. Social researchers are deeply involved in developing appropriate tools and mechanism but not so much effort is paid in analysing the origin of this new demand of quality assurance systems.

In the past state employment was the major single outlet for graduates and there was a strong correspondence between qualifications and occupations. The increased number of graduates, the currently mass status of higher education and the need to provide skills to a high technology-based economy (Cooke 2003), compelled universities to deal with the problem of satisfying the overriding demands of the private sector, the only available outlet for most of the graduates.

Mass higher education and the «tyranny of numbers» (Wolf 2002) produced a sharp deterioration in the conditions under which students worked and studied and a strong need to reduce public expenditure. As well expressed by Guy Neave (1994), there is an «amazing contradiction between the expressed purpose of policy to ensure *quality* in higher education and the simultaneous action of national administrations which, as a true monument to the concept of *effets pervers*, neatly ensured the contrary. […] Rather the financial responsibility which government seek to *offload* is passed back to higher education as a desirable commodity»[2]. Staff/student ratios, student debt and every possible indicator testify this deterioration of the quality of services provided by universities (OECD 2002).

This glaring contradiction between decreasing effective quality and increasing rhetoric about quality and duties related to quality assurance mechanism is made worse by the fact the unemployment is increasing among even the holders of the best diplomas (Wolf 2002). In some European regions the level of unemployment among highly educated people is astonishingly high and in Central Italy the level of unemployment amongst young people with primary or no schooling is practically the same as amongst individuals with university degrees: 14.1% and 14.5% respectively (ISTAT 2001).

[2] Neave G. (1994), p. 100.

If the main philosophical background of quality is «customer satisfaction» or «accountability to the client» and, in the specific case of universities, we would say «accountability to very different stakeholders», higher education institutions should address these contradictions soon unless they want to disappoint customer and stakeholders expectations. The fact that rhetoric about quality and formalized quality assurance mechanisms are continually increasing these expectations and making them more precise and verifiable, makes the task harder and harder.

This paper argues that the University of Twente in the Netherlands tackled these contradictions effectively and managed to turn problems into opportunities. In particular, it managed to satisfy the needs and expectations of its major stakeholders: students, academic personnel, the region of Twente and its economy. In fact, as far as the regional economy is concerned we will see that the University Twente gave a major contribution to its development and revitalization.

There have been many «management fads» (Birnbaum 2001) in higher education, such as «program planning budgeting system», «management by objectives», «zero-base budgeting», «strategic planning», «benchmarking» and more recently «total quality management» and «business process reengineering». As well shown by Robert Birnbaum, none of these management practices proved very effective by itself in higher education, because «we know from experience that it is no easier to get people to implement a management strategy inconsistent with their values than it is to get internal combustion from water»[3]; if this lesson may be debatable for firms it proved undebated for universities. As will shall see, Twente's success derived from its ability to change organizational culture and internal values. As a consequence of these change some of the most popular management practices, such as «lup-sum budgeting», proved themselves effective in Twente.

The case of the University of Twente doesn't provide us with a «ready-made recipe» (Kitagawa 2003), because there is not such a thing as a «ready-made recipe» in the management of higher education institutions. On the opposite, it shows us how a university can successfully change its organizational culture and values to find his own way: «There is no ready-made *recipe* as such. […] Institutions have to recruit *top chef* who can create good *recipes* rather than only manage the organisation; good *cooks* who can find good ingredients (knowledge) and cook them well (carry out research), and need good *staff* who know how to serve the dishes to the customers (teach, consult and apply), and even spin-out. Needless to say, to satisfy the good customers with good 'quality' service is always the key for a successful business»[4].

[3] Birnbaum R. (2001), p. xii.
[4] Kitagawa F. (2003), p. 15.

From an organizational point of view, the image of the crossing versus the roundabout (Jongbloed 2003) seems quite effective. Both are systems of co-ordination. In the traffic light case, a complex steering device controls the system. There is little interaction between individuals and a central regulator is steering the system from the top. In the roundabout system, steering takes place via user decisions (self-steering) in which the users organize their own production and are heavily involved in interactions with each other, creating «knowledge»[5] in the form of «organizational culture». As a result, in the roundabout case it is the client who is in control.

After a brief description of the University of Twente, its organisational culture and evolution, this chapter will not provide any «ready-made *recipe*» for the management of higher education institutions (to satisfy their different «stakeholders») but it will give our own reading about the major «roundabouts», their nature and functions, we had the opportunity to see inside the institution.

The methodology we used is the *case study methodology*[6] as defined by Robert K. Yin (1989) and our unit of analysis is basically the University of Twente even if we paid due attention to the region in which the University is embedded.

We used multiple sources of evidence: *direct observation* by making a field visit to the case study «site»; some *interviews* of an *open-ended nature*[7] to students, administrative personnel and academic personnel; *documentation*, especially in the form of formal studies and evaluations of the same «site» under study and from different disciplinary perspectives. The *documentation* was the hugest source of evidence and it is entirely listed in the references.

2. Twente's View

In 2003, Jan Curie, Richard De Angelis, Harry De Boer, Jeroen Huisman and Claude Lacotte, produced a detailed cross-case study and a comparison among the University of Avignon (France), the University of Twente (Netherlands), the University of Oslo (Norway) and the Boston College (U.S.A.), and contrasted the results with Australia as archetype of Anglo-American country. They conducted a qualitative study, based on 131 interviews with a small number of senior administrators and an approximately equal number of academic staff from professional schools (education, ap-

[5] We define knowledge «as the ability to produce an effective action in a consensual domain nurtured ad sustained through continuous social interactions»; see chapter 2 for more details and references.

[6] Yin R., (1989), *Case study research. Design and methods*, Sage Pubblications, USA.

[7] Robert K. Yin, (1989), p.89.

plied languages, law), sciences and social sciences. The sample included 37 individuals from Boston, 32 from Avignon, 31 from Oslo, and 31 from Twente. The measures of economic and social levels of the five countries are very similar: high-income, high standard of living, industrialized nations with mid to high GDP per capita.

The interviews investigated issues currently debated in higher education such us privatisation, competition, entrepreneurialism, university governance, accountability, employment flexibility and new technologies. These interviews reveal that the University of Twente is the only one in which practices and attitudes are favourable to significant private sector and competitive reforms, while elsewhere such changes are partial, pragmatic, and subject to immediate modifications if they fail to work. Even in the wholly private, American, nonprofit Jesuit Boston College, there is support for many practices that are not inspired by private, corporate or capitalist models, such as widespread tenure, academic autonomy and freedom, widespread consultation, support for academic fields by criteria of academic excellence and freedom.

In Avignon and Oslo the language is «central authorities have cut existing budgets». In Boston and Twente it is «management requested to seek more funds from outside sources»: in Twente 97% of the interviewees said that the management did; in the Boston College this percentage is 76%.

It may be interesting to underline that in its mission statement Twente describes itself as «an entrepreneurial university for academic education and research, offering training courses in both technical and social disciplines» (Clark 1998). It combines technological and social sciences and its main focus concerns excellent research and labour market needs, ensuring that graduates have little difficult finding employment.

Twente's idea of explicitly declaring itself an «entrepreneurial university» dates back to the early 1980s, when it decided to establish close links to regional industries and to follow its aspiration to be leader in information and communication technology. Starting from the early 1980s, Twente has adopted in research competition practices very similar to those adopted within Anglo-American universities and very different from the European ones. According to a senior Twente's academic in social sciences, very representative of the general view «we are already considered the most entrepreneurial university in the Netherlands […]. We have to find money from the market. We do it well both in social sciences and in engineering. There is a lot of contract research and setting up of companies. There is even the idea of making students become young entrepreneurs as well»[8]. At Twente, many people emphasize that contacts with industry satisfy students' desire to work at thing that are real and provide greater academic freedom: «the

[8] Currie J., De Angelis R., De Boer H., Huisman J. and Lacotte C. (2003), p. 64.

advantage is gaining greater academic freedom. If we can get funds outside of government funding, it gives us more financial autonomy»[9].

What we want to stress here is that the University of Twente's view about entrepreneurship helps it to produce a kind of «knowledge» that is the result of actions and interactions with the social and economic community in which the institution is embedded[10].

Twente's view about «accountability», as «answerability for performance»[11] or «obligation to report to others, to explain, to justify, to answer questions about how resources have been used and to what effect»[12], is no less interesting.

In 1985 the Netherlands decided to shift from a rather dominant system of state control to a system of state supervision. The white paper Higher Education Autonomy and Quality (HOAK), stated the government's view on higher education for the following years. The major point was the shifting from *ex ante* measures, controlling quality and setting the rules and procedures in detail, to *ex post* evaluations of quality, making the institutions themselves primarily responsible for maintaining the quality of education.

In the Netherlands the University of Twente was among the first ones to respond actively to this change in government's strategy and four different methods for monitoring performance of academics were established: annual individual reviews without sanctions, teaching surveys, reports from the department chair, annual reviews with bonuses and task reassignments. What is special about Twente and makes it different from many other institutions is that most of the academics appreciated the monitoring system and considered it effective[13]. This declaration is representative of the belief of the majority: «Yes, I think they do have positive influences in the long run. I've been working at the university for 20 years, and in the beginning there were few monitoring activities in research or in teaching. And now I would say that these monitoring activities have improved the quality of teaching and research»[14].

As far as academic employment is concerned, Twente and the Dutch system in general have moved toward a much greater flexibility than other

[9] Currie J., De Angelis R., De Boer H., Huisman J. and Lacotte C. (2003), p. 68.
[10] See chapter two for this concept of knowledge and its relations with intellectual employment: it is possible to argue that the objective to produce «knowledge» as «ability to produce an effective action in a consensual domain» may be the best way for higher education institutions to deal with the problem of intellectual unemployment or to provide a career to their students.
[11] Romzek S. (2000), p. 22.
[12] Trow M. (1996), p. 310.
[13] Over half of the responses indicated that the measures were effective (54 per cent), according to the survey conducted by Currie J., De Angelis R., De Boer H., Huisman J. and Lacotte C. (2003), *Globalizing practices and university responses*, Praeger Publishers, Westport, Mass. (USA), p. 134.
[14] *Ibid.*

European countries, with the only exception of the U.K. Academic personnel seem to accept these changes and are not concerned about academic freedom, may be because of the traditional Dutch tolerance of diversity and freedom of speech: «our status of workers in this university will be more like [in] companies. There are quite a few restrictions on being fired. Even in the private sector it is not too easy to get rid of personnel, but they can. The differences between public and the private sector employees are diminishing. So the civil servant rules are systematically changing in the direction of private companies, and that's a national policy. And the system of companies is to have some sort of open-ended contract where you can be fired if there are financial problems or the factory is closing down. There is a series of steps to be taken, but once these are guaranteed than that should serve for all employees, whether private or public (Twente, Senior, Male, Manager)»[15].

The appearance is that Twente and the Dutch system in general have maintained the legal status of civil servants for academic staff, like in France, Italy, Spain or Norway. In reality, even if the government didn't abolish the public character of higher education and transform universities into completely private enterprises, according to De Weerte and van Vucht Tijsen (1999) the devolution of responsibilities for salary negotiations to institutions is a strong shift from the «public service relationship», typical of European countries, to the «contractual one», typical of Anglo-Saxon countries, where higher education institutions are not formally part of the state and have an autonomous status.

According to the study conducted by Jan Currie (2003), the University of Twente has the highest percentage of responses against tenure or permanency («No»): it's 32 percent in Twente, 5 percent in Avignon, 11 percent at the Boston College and 0 percent in Oslo. On the opposite side, if asked about their favour for tenure, many people are in a «dilemma» or «in favour under specific conditions» but again the number of people «definitely in favour» of tenure is the lowest («Yes») in Twente: it is 29 percent in Twente, 44 percent at the Boston College, 53 percent in Oslo, 63 percent in Avignon. In Oslo and Twente there is strong evidence that older faculty favour tenure more than younger faculty.

Many statements from academics in Twente can give a flavour of what is going on there: «No, I don't think you should keep permanency. There are people who get older and slow down. I think you should be able as a University to say, "Okay you did a great job, but now it's over"»[16] (Junior, Female, Academic, Sciences); «You may offer permanency to your top professors and top academics, but it should be your own institutional choice to do so. In the current civil service system, you have a national rule about

[15] Currie J., De Angelis R., De Boer H., Huisman J. and Lacotte C. (2003), pp. 140-141.
[16] Currie J., De Angelis R., De Boer H., Huisman J. and Lacotte C. (2003), p. 154.

after working two years in a place, and then automatically have the right to permanency. That's bad. I recognize the need of the university to have some sort of mix of short contracts, longer contracts, and when you want to keep your quality academics, you have to offer open ended contracts and say, "well you can stay here". If not and they are good enough, then you feel the national and international competition, "Okay, bye-bye, I have a better offer in Hamburg"»[17] (Senior, Male, Academic, Sciences).

3. The idea of an Entrepreneurial University

The University of Twente was officially created in 1961 by the Dutch government and the first 250 students were enrolled in 1964. It was located in Enschede, in the Netherlands region of Twente, in the province of Overijssel, close to the German border.

It is one of the youngest of the thirteen Dutch Universities and it's original name was «Twente University of Technology», as from the beginning it was supposed to take a place between the previously established technological universities of Delft, founded in 1842, and Eindhoven, founded in 1956. The government, in fact, expected at that time shortages in engineers and scientists especially in chemical, mechanical and electrical engineering.

In the 1960s Twente, with about 600 thousand inhabitants, was a textile region and had a «mono» industrial culture centred on textile and machinery. The sharp and sudden decline of the textile industry, as firms fled to cheap-labour locations in other countries, was a major factor in the government's decision to establish the new university in Twente and not in the other candidate locations, that were Arnhem, Deventer and Zwolle. Because of the decline in the textile industry Twente became a European Union Objective 2 region (it has now lost this status) and received money to develop the knowledge infrastructure (through the European Regional Development Fund, ERDF) and to develop its human resources (through the European Social Fund). The commitment of the local industries and cities in Twente and the availability of a superior and huge «greenfield» location, very unusual for Europenan standard, finally settled the location matter of the «campus university» in Enschede.

Very soon the University realized that it was located in a pastoral and green site, full of nice landscapes, lakes and forests but with no industrial structure to connect with, as the textile one was disappearing, leaving emptied textile mills on its back as ghostlike and depressing memories of what had been. Even from a geographic point of view Twente was at a disadvan-

[17] Currie J., De Angelis R., De Boer H., Huisman J. and Lacotte C. (2003), p. 152.

tage, as the most talented young people in the Netherlands prefer to study and live in the West, where most of the cultural, economic and political life is going on.

The number of students grew very slowly and was 2,000 by 1970 and less than 4,000 by 1978. Twente was very marginalized in the Dutch higher education system and with serious financial problems.

At the beginnings of the 1980s there were rumours that some faculties and even the University as a whole would have been closed down by the Dutch government.

At that same time a professor of mechanical engineering, Harry Van den Kroonenberg, a high profile public figure and strong-minded academic, with a reputation for leadership and imposing speeches, was appointed as Rector Magnificus. He was in office from 1979 to 1982 and again from 1985 to 1988. He successfully delivered the idea, at every level inside the organization, that the University of Twente should transform itself into «the entrepreneurial university». It was a real and hard campaign, with advertisings, speeches, public meetings and declarations to win hearts and minds inside the organization and to prepare the ground for what was going to happen. The mathematician Erik Bolle was appointed as administrative director.

Burton R. Clark (1998), referring to universities, uses the term «entrepreneurial» and «innovative» as loosely synonymous, so implicitly adopting a schumpeterian view about entrepreneurship[18], but at the end he chooses the much more uncomfortable and debatable term «entrepreneurial» over «innovative», «because it points more powerfully to deliberate local effort, to actions that lead to change in organizational posture […] a wilful effort in institution-building that requires much special activity and energy. Taking risks when initiating new practices whose outcome is in doubt is a major factor. An entrepreneurial university, on its own, actively seeks to innovate in how it goes about its business. […] Entrepreneurial universities seek to become «stand-up» universities that are significant actors on their own terms»[19].

According to Clark (1998), five elements are needed, as an irreducible minimum, to transform «a traditional university» into an «entrepreneurial university»:

1. a strengthened steering core; this factor concerns the internal organization of a university;

[18] Schumpeter J. (1934), *The theory of economic development*, Harvard University Press, Mass. (U.S.A.); following this same tradition Fazzi R. (1982), *Il Governo d'impresa*, Giuffré, Milano, vol. I.

[19] Clark R.B. (1998), *Creating entrepreneurial universities, organizational pathways of transformation*, Issues in Higher Education Press, Oxford (UK), p. 4.

2. an expanded developmental periphery; this factor addresses the way in which a university interacts with its environment and the type of organisational units and means and programmes a university implements for the interactions;
3. a diversified funding base; an entrepreneurial university should not be solely dependent on government funds, but also use other types of funds, from example from industry or from the European Union;
4. a stimulated academic heartland; that is an excellent quality of research;
5. an integrated entrepreneurial culture; an atmosphere of entrepreneurship and innovation should permeate every layer of the organisation;

Of the five factors, this last one, in our view, is the most vital and fragile, universities being «heavy bottom» institutions in which opposition or passive attitude of personnel can paralyse whatever effort from whatever strengthened, competent and well funded steering core.

The University of Twente, thanks to the credibility of its leadership and institutional idea, managed to create an integrated entrepreneurial culture inside itself and only thanks to that base it could implement successful management practices to improve quality.

According to Van der Sijde and Van Tilburg (1998), five factors are needed to enhance entrepreneurship and create an entrepreneurial climate:

1. educational resources (particularly for higher education)
2. quality of labour;
3. quality of government (open attitude and ability to stimulate entrepreneurship via such means such as venture capital or support organisations);
4. telecommunications;
5. quality of life;

Even if it's impossible to provide a recipe to create entrepreneurial culture inside universities, it's a fact that it was possible in a very marginalized university, in a depressed area, without high-tech industries, without special financial resources and inside a higher education system traditionally very centralized.

Indeed, it's possible to argue that this marginalization was the main reason why the members of the organisation felt they should work together towards change.

Twente's entrepreneurial attitude, at all levels, shows itself in many ways; here are some of the main ones:

- 1/3 of the total financial support deriving from the private sector and from competitive sources;

- a real lump-sum budgetary system for faculties, departments and research centres;
- 437 spin-off companies from the University; 219 of which under a scheme designed by the University itself (TOP – Temporary Entrepreneurial Placements); of the total number of companies 68% are still in business offering employment opportunities to 3,134 people; survival rate for TOP companies is 75%, for non-TOP companies it is 61%[20];
- it has been estimated that in 44% of the cases spin-off companies are to a large or very large extent based on knowledge and contacts established in the University of Twente, which served as consultant and mentor during the start-up phase and often provided office spaces[21];
- a Business and Science Park, occupying more than 40 hectares, home to some 195 companies and 4,000 jobs;
- an effective business incubator, BTC-Twente Ltd., whose main shareholder is the University of Twente itself, which managed to bridge the gap between the Business and Science Park and the newly born spin-off companies located inside the university;
- an active role in providing employment to students after graduation;
- consciousness that knowledge is generated by people and that establishing personal contacts between people from universities, industry and commerce is a precarious process which must be supported by the building up and maintaining of networks of personal relations, through the creation of programmes and schemes designed for this specific purpose.

The *lup-sum budgetary system*, in particular, which was designed by the administrative director and mathematician Erik Bolle, also known in management studies as *responsibility-centre budgeting*, proved one of the most effective tools in educating an entrepreneurial spirit inside academics. It gave faculties and departments complete freedom and responsibility about how to spend the sum of money annually provided, producing a shocking shift towards «accountability» and «responsibility».

4. Governance and management

The main issue of governance in higher education institution is «who are the people that are entitled to rule?».

It's commonly held, in a democratic view, that the people entitled to rule should be the people whose interests are affected. The point is that

[20] Karnbeek A. J. (2001), *Spin-offs and the University of Twente*, Twente University Press, Enchede (NL), p. 5.
[21] Karnbeek A. J. (2001), p. 7.

modern universities, having a key role in the transformation of industrial societies into the so called «knowledege-based societies», have a multiplicity of functions and are actually affecting many different interests: students, academic and administrative personnel, regional governments, national government, local communities, industries and agencies.

This transformation became clear in the 1980s, just when Twente decided to evolve into «the entrepreneurial university». Untill the 1980s, universities, were «cultural institutions» whose main functions were «embodying and fostering the cultural heritage of a country»[22]. From around 1970 on, society was also asking the universities to leave their ivory tower and become relevant to society; this was part of the critical movements, but also visible in governance, for example through democratisation of universities, including having non-academics as member of the university council. What was new in the 1980s was the emphasis on serving economic and policy goals, rather than general relevance. Starting from the 1980s, society began to ask much more and to consider universities as «public service institutions». Everywhere political decision makers began to demand that quasi-public institutions such as universities presented useful and applicable results linked to concrete social, political and economic goals and submitted to an assessment procedure regarding their efficiency in terms of input and output. «The lack of transparency concerning the fruitfulness of scientific activities, the shutting-off of university life from social and economic demands […] *were* often criticised. The protective aura of a cultural institution begins to pale, forcing the universities to base their legitimacy on new foundations»[23].

As a consequence, the issue of identifying the different «stakeholders» for a university and to design an effective governance, is a crucial task.

According to the famous and cited Clark's «triangle»[24], advanced industrial countries have developed different forms of co-ordination of higher education which are located between three axes: a more market-like co-ordination (USA), a more state-induced co-ordination (Sweden) and a form of co-ordination which is based on the rule of the academic oligarchy (Italy)[25].

Many other attempts followed to systematise governance systems in higher education but the most explicative one for the case of Twente seems

[22] Braun D. and Merrien F. (1999), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London, p. 12.
[23] Braun D. and Merrien F. (1999), p. 14.
[24] Clark B. (1983), *The higher education system. academic organizations in cross-national perspective*, University of California Press, Berkley CA, p. 143.
[25] Giliberto Capano documents that in Italy universities are firmly in the hands of academics despite strong formal powers of the state: Capano G. (1999), *Italy: the endless transition*, in Braun D. and Merrien F. (1999) (eds.), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London.

the one from van Vught (1989), who reduces the Clark' triangle into two models:

1. a *state control model,* typical of many European countries, with strong authority of both academic oligarchy and state bureaucracy and a weak management inside the university; the government intrudes into higher education by means of strict and detailed regulation and strict control;
2. a *state supervising model*, typical of the Anglo-Saxon tradition, in which state bureaucracy is very weak and the power is divided between the academic oligarchy and the internal management;

In the Netherlands there are 13 universities and till the beginning of the 1970s there was in all of them a strict separation between management of academic affairs (the *senate*, representing the academic oligarchy) and non-academic affairs (the *college van curatoren* or «board of curators», representing the state bureaucracy).

In 1970 the Act of University Governance abolished both the *senate* and the *college van curatoren.*

They were replaced by: 1) a «university council»; 2) a «chief executive board» and 3) a «board of deans». The «university council», representing academics (one third), non-academics personnel and general public from outside the university (one third) and students (one third), had a «legislative function» and approved the budget. The «chief executive board» (*college van bestuur*) consisted of five members, including the *rector magnificus*: the national government appointed the *rector* and two other members (choosing among the nominations submitted by the «university council» and the «board of deans»), the «university council» elected the other two members. The «chief executive board» had all the powers previously held by the *college van curatoren.* The «board of deans» had mainly advisory powers regarding teaching and research.

In 1997 the Act Modernizing University's Governance Structures definitely shifted the system from a *state control model* to a *state supervising model* in which «a new hierarchical management system based on appointments replaced the old, democratic system, inclusive of all interested groups based on elections»[26]. The new system consisted of: 1) the «university council» with an advisory function (it no longer approved the budget or had legislative powers); 2) a «supervisory body» (*raad van toezicht*), consisting of five members appointed by the minister and accountable to him, responsible for the strategic management and the planning of the institution; 3) an «executive board», with much more powers than the previous *college van*

[26] Currie J., De Angelis R., De Boer H., Huisman J. and Lacotte C. (2003), p. 94.

bestuur and consisting of a maximum of three people, including the *rector*, all of them appointed by the «supervisory body».

The new act gave much more power to faculties and deans (these ones appointed by the «executive board» who can choose people coming from outside the university) and favoured single-headed authorities and managerialism, meaning strengthened executive leadership. The Act also shortened the «chain of command» eliminating many «departments» and leaving just advisory powers to faculty councils (half of the faculty council members, whose size varies from 3 to over 20, must be student).

It can be important to add that in Twente it has always proved difficult to find people who want to be elected in representative bodies so that elections prove to be a difficult job and the appointment system was quite a relief for everyone.

When Van den Kroonenberg was appointed *rector*, and one of the five members of the «chief executive board» (*college van bestuur*), in 1979, he had not just the leadership but also the executive powers to establish an office (*Transferpunt*) with two main objectives: 1) looking for additional income to deal with reducing sources from the government; 2) helping the declining local economy, providing assistance to students who wanted to start their own business. In 1984 this led to the establishments of a very successful program, called the TOP program (Temporary Entrepreneurial Placements).

The main objective of TOP was to encourage and help graduates from the university to start their own knowledge-based company. What a graduate needed was a credible business plan and a business idea matching with the interest of staff members in one of the research group of the university. During the first year the knowledge-based company could stay inside the university (taking free advantage of office-space, communications, laboratory facilities, courses about entrepreneurship and a small personal loan). In the following two years the company was supposed to move out of the university and into the business incubator, just on the border of the campus (BTC), where it was supposed to pay for the provided services (the main stakeholder of BTC is the University of Twente itself). When the company was too big for the business incubator it was supposed to establish itself into the «Business and Science Park» surrounding the campus. As we have already seen, 219 companies were born under the TOP program and 75% of them are still alive.

The University of Twente began very early to consider itself a «public service institution» for local development more than a «cultural institution» and coherently began to monitor quality and the efficiency and effectiveness of its mission. The mission was embodied at every level of the institution and personnel were active and cooperative.

The different accountability mechanisms were well accepted by personnel, because they were perceived as tools to achieve that mission, and

the lump-sump budgeting system (which makes faculties pay the central administration for the use computing facilities, lecture halls, libraries and office spaces) made everyone aware that «there is not such a thing as a free lunch».

Very early the University made internal funding for research as competitive as the funding from outside sources and in the late 1990s it even selected excellence centres for extra money. The achievements in Strategic Science (Arie Rip 2002) were of a high quality and in fields such as membrane science and technology, biomedical materials and technologies, nanotechnology and ICT.

Following Arie Rip (2002) we define Strategic Science as a «regime» of more or less stabilized rules of how to proceed, in doing science as well as in organizing it and legitimating it. Under this regime the distance between scientific research and eventual applications disappears and scientists have internalised the social pressure for relevance of research: the new scientific establishment promises to contribute to wealth creation and sustainability (and working toward it) and forges new alliances with policy makers and social actors on this basis. Under this regime not every research programme ends in an actual prototype or commercial product, of course, but horizontal mobility of scientists and lateral combinations benefit industrial innovation. This was often the case in Twente, for example when physicists, chemists and electronic engineers worked together in a research programme to find a micro-optics alternative to microelectronics. The research programme was not successful but the «various participants were reasonably successful in taking up other, but related research and linking it with national research programmes and relevant industrial actors»[27].

5. An «embedded university»

As well underlined by Philip Cooke «probably one reason greater pressure is now put on universities to take the lead in regional economic development, apart from the obvious one that they are heavily implicated as sources of potential knowledge commercialisation, is that they are among the few organizations in any given region with legitimate authority to speak knowledgeably on science, technology and, it is hence believed, innovation and the policy to support it»[28]. As a consequence universities are corner stones of the governance structure of «knowledge economies» or, even more often, local systems and regions whose ambition is to become «knowledge economies».

[27] Rip A. (2002), *Regional innovation systems and the advent of strategic science*, «Journal of Technology Transfer», n. 27, p. 126.
[28] Cooke P. (2003), *Knowledge economies*, Routledge, London, p. 50.

In his recently published deep investigation about «Knowledge Economies» (Cooke 2003), Philip Cooke draws the policy lesson that «cut-throat» competition works against competitive, let alone co-operative advantage, while vertical interaction in the governance sphere and horizontal interaction and regional partnership for collective learning produce promising results for policies seeking to promote knowledge economies.

It is a conclusion not different from the one he theorized for «traditional economies» in *The associational economy* (1998) but its much more detailed on the policy level, with the new concepts of multi-level governance and «cultural embeddedness as an evolutionary process»[29].

We believe that the model developed by Philip Cooke well applies to the region of Twente and its University, because the University had a leading role in the creation of a «knowledge economy», through an evolutionary process in which regional partnerships for collective learning and vertical interaction in a «multi-level governance framework» were both promoted (the EU, the national government, the regional and local government, all played a key role).

In 1997 the University of Twente presented a study about its effects on the region of Twente and the province of Overijssel[30], based on the model developed by Florax in 1987[31]. It concluded that the University of Twente had substantial effects on the region and classified them into several categories: demography, politics, economy, infrastructure, culture, attraction, education, social effects.

Even if, at a first glance, it may be argued that the benefits for the region of Twente (600,000 inhabitants) and the province of Overijssel are not equally distributed and mostly concentrated within a range of 20 km around the university (in the «Business and Science Park Enschede»), where the concentration of spin-off companies is more visible and higher, an investigation conducted on a sample of 189 spin-off companies showed that more than a half of them (55.2%) located head offices elsewhere in Twente and only 23.2% located in the direct vicinity of the University[32]:

[29] «An analysis of exemplary characteristics of accomplished regions showed that a high degree of administrative competence and regional embeddedness is of crucial importance to mobilization and capability to achieve govern innovation policy, an exemplar new regional function. The development of embeddedness is itself an evolutionary process, important elements of which can be learned, though not necessarily imitated directly». Cooke P. (2003), *Knowledge economies*, Routledge, London, p. 71.

[30] University of Twente (1997), *The University of Twente as the motor of the economy of Twente; a study of the economic effects of the University of Twente in the region of Twente,* Internal report from the University of Twente, in Dutch: cited in Van Alsté J.A. and Van der Sijde P.C. (1998), *The role of the university in regional development*, Twente University Press, Enchede (NL).

[31]

[32] Karnbeek A.J. (2001), *Spin-offs and the University of Twente*, Twente University Press, Enchede (NL), p. 27.

Table 1.

Location of head office						
	Total		TOP		Other	
	n	%	n	%	n	%
Ut Campus	9	4.8	4	3.4	5	6.8
Enschede B and S Park	43	22.8	23	19.8	20	27.4
Enschede / Hengelo	72	38.1	46	39.7	26	35.6
Elsewhere in Twente	24	12.7	18	15.5	6	8.2
Elsewhere in Overijssel	9	4.8	2	1.7	7	9.6
Groningen	2	1.1	1	0.9	1	1.4
Friesland	3	1.6	3	2.6	0	0.0
Drenthe	1	0.5	0	0.0	1	1.4
Gelderland	10	5.3	5	4.3	5	6.8
Flevoland	1	0.5	1	0.9	0	0.0
Noord-Holland	4	2.1	4	3.4	0	0.0
Zuid-Holland	7	3.7	5	4.3	2	2.7
Brabant	2	1.1	2	1.7	0	0.0
Limburg	1	0.5	1	0.9	0	0.0
Zeeland	1	0.5	1	0.9	0	0.0
TOTAL	189	100.0	116	100.0	73	100.0

The data about the distribution of TOP companies and non TOP companies clearly show that Twente is not just a «science park phenomenon» but a «regional development phenomenon» in which policy (e.g. the TOP program) played a major role. The following table shows the same data in a less detailed version[33]:

Table 2

Regions where the head offices are located						
	Total		TOP		Other	
	n	%	N	%	n	%
Twente	148	78,4	91	78.4	57	78.0
Elsewhere in the province of Overijssel	9	4.8	2	1.7	7	9.6
Elsewhere in the Netherlands	32	16.8	23	19.9	9	12.4
TOTAL	189	100.0	116	100.0	73	100.0

[33] Karnbeek A.J. (2001).

The TOP program (Temporary Entrepreneurial Positions programme) which played such a major role in the development of spin-offs companies and was established to encourage graduates of the university to start their own knowledge-based business, is the result of a cooperation among the University of Twente, the national government, the regional government and the European Union, through a vertical interaction in a «multi-level governance framework». It started as a «bottom-up» programme, from a «leading university», when prof. Van den Kroonenberg decided to support his own students with his own money and, the program being very successful, it received financial support and attention from the Dutch Ministry of Economic Affairs and later from the European Social Fund; regional authorities and mentors from industry supported the program from the very beginning. An extrapolation of 297 companies out of 437 that have sprung from the University of Twente (68% of which are still in business) shows that they provide 3,134 employment positions in high-tech industries and with increasing trends in the number of jobs per company (Karnbeek 2001):

Table 3

	2000	1997	1993	1990	1984	1980
Employment positions	3,134	1,836	895	1,094	295	141
Number of companies	297	211	179	144	82	38
Number of jobs per company	10.6	8.7	5.0	7.6	3.6	3.7

The most important fields of study that the companies surveyed consider crucial to their activities are mechanical engineering (37%), information and communication technology (36%), microsystems technology (22%), chemical technology (12%), biomedical technology (6%) and management studies (45%) and most of them had important contact with the University of Twente during the start-up phase[34]:

Table 4

Contact during the start-up phase			
	Total (%)	TOP (%)	nonTOP(%)
Consultative/mentoring function	46.8	61.4	24.3
Use of UT facilities	20.2	22.8	16.2
Use of UT trainees and/or student	11.7	14.9	6.8
Occasional client referral from the UT	11.7	13.2	9.5

[34] Karnbeek A.J. (2001), p. 40.

Completion of assignments for the UT	10.1	12.3	6.8
Solving specific technological problems	6.9	9.6	2.7
We occasionally provide visiting lectures to the UT	4.3	5.3	2.7
We outsource work for the UT	3.2	5.3	0
We occasionally refers clients to the UT	2.1	2.6	1.4
The UT and us engage in joint promotion campaigns	1.6	0	4.1
Use of UT trainee research assistants	0.5	0.9	0
No contact whatsoever with UT	17.1	7.9	31.1
Other	3.7	0	9.5
Do not know	3.7	2.6	5.4

All the UT faculties or departments had contact with spin-offs companies during the start-up phase (the most active was «mechanical engineering» who had contact in 18.9% of the cases; the less active was «applied mathematics» with 1.6%; «philosophy and social sciences» scored a surprising 3.3% the same percentage of the «Business school») and in many cases these contacts were maintained well beyond the start-up phase[35]:

Table 5

Current contacts			
	Total (%)	TOP (%)	NonTOP(%)
Consultative/mentoring function	30.7	37.1	20.5
Use of UT facilities	14.8	16.4	12.3
Use of UT trainees and/or student	14.3	15.5	12.3
Occasional client referral from the UT	9.0	10.3	6.8
Completion of assignments for the UT	7.9	7.8	8.2
Solving specific technological problems	4.8	5.2	4.1
We occasionally provide visiting lectures to the UT	4.2	4.3	4.1

[35] Karnbeek A.J. (2001), p. 47.

We outsource work for the UT	3.7	5.2	1.4
We occasionally refers clients to the UT	3.7	4.3	2.7
The UT and us engage in joint promotion campaigns	3.2	0	8.2
Use of UT trainee research assistants	1.1	1.7	0
No contact whatsoever with UT	35.4	31.0	42.5
Other	2.6	2.6	2.7
Do not know	0.5	0	1.4

and with a high degree of satisfaction with the contact reported by the companies[36]:

Satisfaction with current contact						
	total		TOP		other	
	n	%	n	%	n	%
Highly satisfied	43	35.2	22	27.5	21	50.0
Satisfied	75	61.5	55	68.8	20	47.6
Dissatisfied	3	2.5	2	2.5	1	2.3
Highly dissatisfied	1	0.8	1	1.3	0	0.0
TOTAL	122	100.0	80	100.0	42	100.0

We conclude that the University of Twente played a leading role in the development of a «knowledge economy» in the region of Twente, through regional partnerships for collective learning and vertical interaction in a «multi-level governance» framework (Cooke 2003) and it successfully produced «knowledge» by means of actions and interactions with local agents. We believe that the University of Twente involved itself in the production of a kind of «knowledge» strictly linked to application and action in the surrounding community and very similar to a definition of knowledge «as ability to produce an effective action in a consensual domain, nurtured ad sustained through continuous social interactions»[37].

6. Conclusion

The University of Twente has been for a long time a «regional booster», developing a «knowledge economy» according to Philip Cooke's defini-

[36] *Ibid.*
[37] See chapter II.

tion and model of development (Cooke 2003), starting from a previously depressed local and regional economy, achieving a relevant position in the world of Strategic Science internationally and with all of its graduates finding good jobs. Whatever priorities we want to assign to a university, such as achievements of research, graduates employment or contribution to local and regional development, the University of Twente, starting from a very unfavourable position, has reached high quality standards.

But which is the secret of this success and is there any lesson we can learn from this single case?

We are not able to give a general conclusion about the secret of Twente's success but we are able to draw a much more general conclusion from our single case study and that is, citing Arie Rip (2002), that «The two sides of Strategic Sciences, relevance (local) and excellence (global), can actually be pursued at the same time. Mode 2 of knowledge production, as Gibbons *et al.* (1994), would call it, is finding its institutional forms»[38]. We now know that local economic relevance for universities and their international excellence are not incompatible objectives because they were not in Twente and under very unfavourable conditions.

The emergence of Mode 2 of knowledge production makes the traditional division of labour between fundamental and applied research irrelevant in many cases and with it the functional distinctions between universities' labs and industrial research. In this new situation it's much easier for universities to produce a kind of knowledge both relevant for the local economy and for the global search for new knowledge: «post-modern universities will include overlaps and alliances with Centres (of excellence and relevance), public laboratories of various kinds (themselves on the move!) and various private organisations managing and performing research. The boundaries between the university and the outside world are porous, and such «porosity» is sought explicitly»[39].

It's obvious that Twente's experience cannot be duplicated everywhere, cultural embeddedness being an evolutionary process (Cooke 2003), but nonetheless it's a relevant point to see that it was possible there under very unfavourable circumstances, through the ability of a newly born university to produce an «effective action»[40] in the surrounding community, creating its own responsive agents for future «knowledge interactions».

[38] Rip A. (2002), Regional innovation systems and the advent of strategic science, *Journal of Technology Transfer*, n. 27, p. 128.
[39] Rip A. (2002), *Strategic research, post modern universities and research training*, *paper* presented at the *International conference on science, training and career: changing modes of knowledge production and labour markets*, University of Twente, 21-22 October 2002, p. 6.
[40] See charter II.

Chapter 3

The local and regional economic role of universities: the case of the University of Cardiff[1]

1. Introduction

The theoretical interest in the regional and local impacts of universities has been increasing since the early 1960s and focused on local buying of goods and services, lodging of the university population, and the recruitment of students and employees. This increasing attention was the result of the emergence of a booming mass higher education in need of new buildings and new institutions. The establishment of new «regional universities» became at that time a major policy issue at the local and regional level (Neave 1979: 21-22).

In the 1960s the decentralization of higher education was perceived as one aspect of a much more general decentralization on national welfare for equity and efficiency motives. Geographical decentralisation of higher education could better guarantee equality of educational opportunities, better satisfy local demand of highly qualified labour and contribute to the local economy through local public spending (Cook 1970; Strang 1971).

In the late 1970s and the 1980s, the focus shifted from the regional «expenditure impacts» of universities to the regional and local significance of the university's production of knowledge («knowledge impacts»); this production can be classified through three types of output: human capital, research-based knowledge and knowledge related external services. We have analysed in a different chapter the reasons for this increased importance paid to knowledge in the general economy but as far as universities are concerned early success stories, such as Cambridge (Segal Quince and

[1] A shorter and revised version of this chapter has been published in «Transition Studies Review», Vol. 14, N. 3, 2007, pp. 505-522.

Partners 1984), Silicon Valley and Route 128 (Saxenian 1985), paid a major role.

This chapter will deal with the impacts on regional and local welfare produced by universities, both «expenditure impacts» and «knowledge impacts», and will show the results of a case study conducted on the University of Cardiff and its region.

2. The «decentralisation» of higher education

Before going on, a clarification is needed about the meaning of «decentralisation» of higher education. According to Raymond Florax (1992) it's possible to identify three different aspects of decentralisation: «functional decentralization», «organisational decentralization», «geographic decentralisation» and «control decentralisation».

We have «functional decentralization» when the higher education system is organising itself outside the traditional university sector, through the establishment of new institutions and the upgrading of already existing secondary schools: the university sector is not any more the only provider of higher education (World Bank 2002: 32-41). On the opposite side, we have «functional centralisation» when the university sector engages itself not only in purely academic activity but also in higher vocational education.

We have «organisational decentralisation» when there is an increasing in the number of institutions providing higher education, both in the university sector and outside it. We have «geographical decentralisation» when we have a dispersion of higher education institutions to less centralised regions.

«Control decentralisation» is the transfer of discretionary power and functions from the national government to universities, regional and local governments.

A deep process of decentralisation in organisation, geography and control has affected the European higher education systems, but divergent tendencies can be registered at the functional level.

3. The regional role of the university: methodology for an economic impact assessment

Universities can produce regional impacts through their three main tasks: 1) research; 2) education; 3) and services to the community. These regional impacts, that are produced as direct or indirect consequences of university activities, can be classified according to the different regional subsystems they affect: political (participation of academics and students

to local political life), demographic (population size, structure and mobility), economic, infrastructural (such as housing, traffic, libraries) cultural (increased market for cultural goods), educational (participation rate and quality of education) and social (quality of life, leisure industry, influence of students and academics on social life).

These subsystems are directly and indirectly interrelated in various ways. For example, the university may have an impact on the cultural subsystem, which may affect the political subsystem. The political subsystem may affect the economic subsystem, which may affect the demographic subsystem (for instance immigration inflow may increase in a certain region because of an improved economic situation). The demographic subsystem, directly affected by the economic subsystem, may itself affect the economic subsystem and the cultural subsystem and the process may start again.

The complexity by which the university is linked up with the regional system can be conceptualised by means of a multidimensional impact framework. In a multidimensional impact model the main characteristics of a given region r can be represented by a compound profile vector $v_r = (v_{r,1}, v_{r,2}, \ldots v_{r,I})$ where $i = (1,2,\ldots,I)$ indexes the sub-vectors corresponding to the different subsystems (political, demographic, economic, infrastructural, cultural, educational, social). Each subsystem is made up of a set of indicators.

If it is assumed that the regional system is closed, the elements of v_r are influenced by each other within and among the different subsystems, either in a casual or interdependent way. If the regional system is assumed open, exogenous «shocks» and governmental measures should be taken into account for all the regional profile elements of the different subsystems, $s_r = (s_{r,1}, s_{r,2}, \ldots s_{r,J})$, where $j = (1,2,\ldots,J)$. Being regions very open and dynamic systems, a space-time setting could be provided too, for universities' impacts, to take into account interregional linkages and their dynamics. The impact framework would become eminently complicated and far beyond the possibilities of this work.

It is important to be aware of the full picture but it is also important to be aware that the explicatory power, applicability and reliability of such a model could be, indeed, very weak and disappointing in comparison to the efforts, information, unrealistic assumptions and compromises it requires.

We will limit our attention to what we have described as «expenditure impacts» and «knowledge impacts» and we will see the tools available in the literature to assess both of them. Let's start from «expenditure impacts».

The first studies about universities' local expenditure impact were developed in the late 1940s (Tully 1949) but they were limited to direct expenditure and it was only in the late 1960s that more comprehensive tools were developed.

We have four main groups of methodological tools: economic base models, Caffrey and Isaacs models, Keynesian multiplier models and input-output models. They have been used in studies on the expenditure impacts of various universities and they are theoretically linked (Florax 1992). The Caffrey and Isaacs model (1971) and the ones that were developed from it (ESRG 1972; Booth and Jarret 1976; Sotherden *et al.* 1978; May and Hauck 1981; Lange 1983; Mason *et al.* 1983; Elliot and Meisel 1987) are accounting models specifically designed for assessing the university's impact on regional income and regional employment, the economic base models (Tiebout 1962; Mischaikov and Spratlen 1967; Vizard 1967; Cook 1970; Bellenger 1971; Wilson 1973; Moore 1979), the Keynesian multiplier models (Guyton and McFarland 1968; Johnson 1970; Demopoulos 1973; Taylor and Byrden 1973; Brownrigg 1974; Moore and Sufrin 1974; Fowkes 1983; Mallier and Rosser 1986; Lewis 1988) and the input-output models (Bonner 1968; Strang 1971; Anselin 1988) are, on the opposite, more general economic methods for assessing the impact on the entire regional economy.

The economic base model divides the economy in two sectors: the service sector, producing for local or regional needs, and the basic sector producing for exports; the regional or local economic growth is explained through the growth of the basic sector which produces an induced growth in the service sector. The main limits of the model are its restrictive assumptions: price, wages, technology and income distribution are assumed to be fixed; perfect elasticity of supply and stable relationship between local production and local consumption are assumed. The economic base model results to be purely demand driven and, because of not paying attention to interregional feedbacks, very dependent on the definition of the area. Moreover, it's very difficult to say if the university belongs to the basic or service sector and the economic base multiplier, being an average regional multiplier, may not be accurate when applied to the university.

The Keynesian multiplier models are a step forward in respect to the economic base models, because they consider some negative impacts of the university, such as commercial services provided by the university reducing the demand in local business. Still, as main limits, they are very demand driven, with perfect elasticity of supply and fixed wages and prices.

The input-output model provides much more details about the different sectors in the economy but much more data and an input-output table is needed. It allows taking into account fully the pattern of spending and re-spending, include interregional feedbacks and provide regional multipliers disaggregated by sector. Main limits, generally, are the static nature, perfect elasticity of supply and fixed wages and prices.

The input-output technique has been adopted to measure the expenditure impact of the University of Twente on regional income and employment in the province of Overijssel, in 1990 (Florax 1992): in 1990 income

and employment effect accounted for approximately 1.3 per cent of total income and employment in Overijssel.

From a methodological point of view, measuring the university's «knowledge impact» is a much more difficult task. The methodologies available include comparative analysis (Antikainen 1981), quasi experimentation by means of surveys and single equation models with policy instruments and either a smaller (Stenberg 1990) or larger number of non-policy variables (Anderson *et al.* 1990). Quasi-experimental techniques based on questionnaires and interviews have serious and well-known methodological drawbacks, such as «loss of memory», high percentage of «non response» and high costs. Whenever possible single equation approaches tend to be favoured.

A very well founded model to measure the university's «knowledge impact» on the regional economy is the one from Raymond Florax. He argues (Florax 1992) that the knowledge produced at universities may be a determinant of the regional investment by the manufacturing industry and measures the «knowledge impact» through a multiregional model for investments in non-residential structures and equipment, based on the neoclassical theory of capital accumulation.

In general however, regional economic research has used three main approaches to assess the «knowledge impacts» of universities: 1) location analysis; 2) spatial innovation research; 3) regional economic growth model.

The location analysis rates the relevance of location factors for firms and especially high tech firms, through extensive surveys and sometimes multivariate regression analysis. Through that approach it was possible to show (Molle 1985) that both the awareness of the availability and the actual use of university services are largest among firms located in peripheral and less urbanised regions. Van der Sijde and Van Tilburg (Van der Sijde and Van Tilburg 2000) showed that, even in a small and uniform country like the Netherlands, contacts with the knowledge transfer agencies of the universities are to a considerable extent regionally based. Many location studies found that spin-offs tend to cluster around the university from which they originate.

Spatial innovation research has studied the role of universities in improving and accelerating innovations. Numerous studied have pointed out the regional economic significance of universities for innovation (Davelaar 1991) but their main limit is that it's very difficult to distinguish the production of innovations from mere adaptation of innovations or purchasing of innovations and the use input/output indicators, such as R&D manpower, R&D expenditures or the number of patents and licenses obtained, are not always satisfactory tools, especially for SMEs and industrial districts.

Regional economic growth models are a much more quantitative approach than location analysis or spatial innovation research and they adopt the neoclassical production function as a starting point. Their main asset (and liability) is that they can rely on neoclassical theory and regional economics.

A basic methodological problem of the production function approach for measuring knowledge impacts of universities is the operationalisation of the knowledge variable. Anderson *et al.* (Anderson *et al.* 1990) use the number of full professors as measure of university's regional «knowledge impact» but this measure takes the risk of mixing up both «expenditure impact» and «knowledge impact». The number of patents obtained by the university is even more debatable because innovations not always result in patents and because patents only partly reflect the economic importance of innovations.

From an econometric point of view, the model developed by Florax (Florax 1992) makes a step forward in the tradition of regional economic growth models but it's still affected by the general methodological shortcomings of neoclassical economics. In particular, Florax's model takes into account the spatial diffusion of knowledge as a continuous variable and led to a conclusion about the spatial distribution of economic activity: «the division of labour with regard to universities and private companies requires intensive knowledge interactions. This interaction may take place via contagious and/or hierarchical diffusion of knowledge. If the former dominates, a clustering of economic activity around universities may be expected. If hierarchical diffusion dominates, a clustering around central places instead of around universities will be apparent».

Florax's type of model draws the following further conclusions for the Netherlands:

1. Neither the geographical proximity to academic knowledge production nor the geographical proximity to core areas with a high population density and good access to transportation, communication and knowledge infrastructure are significant determinants of the investments by industry;
2. There is some evidence that geographical coincidence of academic knowledge infrastructure and industrial firms accelerates the process of economic obsolescence, in peripheral regions;
3. As a consequence, the establishment of a university in a peripheral region, given the existence of an industrial complex, implies not just the redistributive feature of regional income and employment growth resulting from the expenditure impact of the university because the accelerated investment in equipment (there is no evidence of an accelerated investment in buildings) may be interpreted, to a considerable extent, as generative growth;
4. As a further consequence of point 2, the establishment of a university in a peripheral region can have much greater effects if a potential for development is already present in the form of an industrial complex;
5. In peripheral regions the presence of a university is not a decisive factor in the location behaviour of firms (this result may be typical of a very

small-scale country like the Netherlands) and it is an irrelevant factor in core regions;

6. Given the high density of academic education and research facilities in core regions, it seems likely that the regional expenditure impacts of these institutes will not change much if a new university is established or a university is closed down. The opposite is true for peripheral regions where knowledge impacts may occur in the form of industrial investments in equipment.

It's necessary to keep in mind that the Netherlands is a small and uniform country with a very open economy. As a consequence, the results provided by Florax may not be applicable to major European countries.

Nonetheless, our review of the available literature and tools to assess the economic impact of universities is necessary to introduce, with full methodological awareness, our case study about the economic impact of Cardiff University.

4. The economic impact of Cardiff University: the data

In 1996 the *Centre for Advanced Studies in the Social Sciences* produced a report for Cardiff University's marketing department about the economic impact of the University on its local and regional economy. A summary of the study was published in 1997 (Cooke and Huggins 1997). We will show the methodology and main findings of the study, repeat the exercise for the financial year 2000-2001 and compare the results. The financial statements for the year 2000-2001 were the last ones available during our visit at Cardiff University in January 2003.

The methodology used is based on the Keynesian multiplier theory: an injection of expenditure into a university leads to expenditure by that institution on staff salaries, goods and services, which together with spending by students coming into the local area raises output and hence income in the area. These (first-round) increases in income in the region lead to subsequent rounds of spending by those benefiting from the expenditure. Therefore, any increase in expenditure feeds its way through a number of sequential rounds with each round declining in size to reflect deductions from income in the form of taxation, social security payments, indirect taxes, savings and spending on imports to the area. Usually, the smaller the region, the smaller the multiplier because the bigger the spending on imports.

The area upon which the impact is analysed is the city of Cardiff at one level, and on a second level the three counties of South Glamorgan, Mid Glamorgan and Gwent, which constitute the South East Wales.

Even if the analysis is confined to single base years (1994-1995 and 2000-2001), the full impact of any expenditure injection is likely to occur over a

number of years. The table below sets out the main components of expenditure associated with the annual operation of the University:

Table 1. Direct expenditure by Cardiff University in different financial years

Direct expenditure by Cardiff University (£ 000)	1994-1995	2000-2001
Academic and related staff	45,666	n.a.
Non-academic staff	10,117	n.a.
Total salaries and wages	55,783	84,990
Non-wage expenditure		
Residences, catering and conferences	5,284	6,338
Consumable and laboratory expenditure	6,960	7,106
Books and periodicals	1,267	2,266
Fellowships, Scholarships and Prizes	388	n.a.
Heat light water and power	1,480	1,811
Repairs and general maintenance	1,308	2,070
Provision for Long term maintenance	1,450	4,610
Grants to University Students' Union	1,323	1,545
Research grants and contracts	4,904	15,369
Other Services rendered	1,653	2,821
Cost of early retirements	813	144
Other provisions	2,563	n.a.
Rents	30	n.a.
Auditors' remuneration	28	28
Auditors' remuneration in respect of non-audit services	79	17
Other expenses	6,152	n.a.
Total Non-wage expenditure	36,013	56,925
Interest payable	9	2,329
Depreciation	10,010	8,099
Total expenditure by Cardiff University (£ 000)	101,815	152,343

Cardiff University is the largest employers in Cardiff, with 2,500 staff in 1994-1995 and 2,962 in 2000-2001 (the «strategic plan» 2002 reports a staff of more than 3,300). The number of students was 13,935 in 1994-1995 and over 16,000 (drawn from 110 countries) in 2000-2001.

In order to assess the expenditure impact of Cardiff University, it's important to assess the percentage of students and staff living in the area as well as purchases placed with local businesses.

In 1994-1995 the number of undergraduates residing in Cardiff for a minimum of 30 weeks of the year were 11,035, while the number of full-time postgraduates residing in Cardiff for a minimum of 30 weeks of the year were 2,146 (students from overseas were 2,213). If we assume the proportion unchanged, these same numbers for the year 2000-2001 are respectively 12,670 and 2,464 (students from overseas 2,540).

In 1994-95 the Universities purchased goods and services to the value of £ 36,013,000 (£ 56,925,000 in 2000-2001). In order to assess the extent of purchasing in Cardiff, South East Wales and elsewhere, a sample survey representing some £ 9,310,210 or 25.85% of expenditure was conducted. The survey revealed that approximately 31.9% of goods and services were purchased in Cardiff, 39.7% in South East Wales (including Cardiff) and 58.1% elsewhere. We assume these percentages unchanged for the financial year 2000-2001. As far as quality of purchases is considered, the ones placed with local businesses tend to be in the £ 1-500 range, with a large proportion of catering, foodstuffs and building services.

Let's see the residential location of staff (we assume it unchanged from 1994-1995 to 2000-2001) as resulting from personnel database:

Table 2. Residential location of staff: percentage of staff living in Cardiff, South East Wales or elsewhere

Location	Academic	Academic related	Research	Clerical	Technician	Manual
Cardiff	55%	68%	85%	66%	55%	84%
South East Wales	97%	99%	97%	100%	99%	100%
Elsewhere	3%	1%	3%	0	2%	0

Student expenditure in Cardiff and South Wales was measured through a questionnaire survey of 500 students. The 258 (51.6%) usable responses showed that the average total weekly expenditure of students in 1994-1995 was £ 81.17 and that only 9.6% of this took place outside of Cardiff or South East Wales. We assume the weekly expenditure in 2000-2001 as a revaluation of the expenditure in 1994-1995 and so £ 93.26 and consider unchanged the proportion of expenditure that took place outside of Cardiff or South East Wales.

5. Cardiff University «expenditure impact» model

In this paragraph we will illustrate the model employed by Philip Cooke and Robert Huggins (1997) to measure the expenditure impact in

1994-1995 and, using last paragraph data, we will apply it to the financial year 2000-2001.

The model involves a number of stages. At the outset this involves estimating the size of the initial monetary injection into the local economy. The expenditure base is given as:

$$E = L + G$$

Where «E» is the expenditure base, «L» labour services bought by the University, «G» goods and services bought from outside the university. «E» excludes pensions, depreciation and self-financing operations (residences, catering) whose effect will be seen through student expenditure.

The first step is to measure «first-round gross local output (GLO)», where GLO is the equivalent of what at the national level would be called National Income or Gross Domestic Product (the money value of all goods and services produced in the local economy):

$$Y_1 = L + A + hG$$

Where «Y_1» is the «first-round GLO», «h» is the proportion of G generated locally and «A» the additional labour income of University employees.

The second step is to measure the «first-round local disposable income (D)», which is the remainder of local income after taxes and other deductions (pensions contributions and National Insurance):

$$D_1 = (1 - t)(Y_1 – hiG)$$

Where «D_1» is the «first-round impact on disposable incomes of local residents», «i» is the indirect tax rate and «t» the direct tax rate.

The third step is to measure the «second-round GLO»:

$$Y_2 = vZ + wc\ D_1$$

Where «Z» is the total spending by students, «v» the proportion of student expenditures made on local produced goods and services, «c» marginal propensity to consume.

The fourth step is to measure the «second-round disposable income»:

$$D_2 = (1 - t)(1-i)Y_2$$

The full multiplier for GLO is:

$$Y_f/Y_1 = (Y_1+Y_2+Y_3+ \ldots)/Y_1 = 1+(1+wc(1-t)(1-i)+\ldots)Y_2/Y_1 =$$
$$= 1+Y_2/[1-wc(1-t)(1-i)]Y_1$$

Where «Y_f» is the final GLO, after all rounds of the multiplier process. The full multiplier for local disposable income is:

$D_f/D_1 = (D_1+D_2+D_3+ \ldots)/D_1 = 1+ (1-t)(1-i)(1+wc(1-t)(1-i)+\ldots)Y_2/D_1 =$
$= 1+(1-t)(1-i)Y_2/[1-wc(1-t)(1-i)]D_1$

Let's now apply the model to the financial year 2000-2001 (£ 000).

6. Cardiff University «expenditure impact» model applied to the financial year 2000-2001

Initial injection
This is given as: E = L + G

L = total labour costs – pensions = 84,990 – 7,853 = 77,137
G = expenditure on goods and services – depreciation = 56,925
E = 77,137 + 56,925 = 134,062

First round gross local output
This is given as:

$Y_1 = L + A + hG$

As we know from previous section h = the proportion of G generated locally = 31.9% for Cardiff and 39.7% for South East Wales. «A» is the additional labour income of University employees, and a coefficient of 0.075 has been used for estimating a proportion of academic and academic related salaries (Blaney 1992).

$Y_1 = 77{,}137+(0.075)(56{,}925)+(0.319)(56{,}925) = 99{,}565$ for Cardiff
$Y_1 = 77{,}137+(0.075)(56{,}925)+(0.397)(56{,}925) = 104{,}006$ for South East Wales

First round local disposable income
This is given as:

$D_1 = (1 - t)(Y_1 – hiG)$

Assuming unchanged the direct tax rate (42%) and the indirect tax rate (14%) from 1994-1995 to 2000-2001 we have:

$D_1 = (1 – 0.42)[99{,}565 – (0.319)(0.14)(56{,}925)] = 56{,}273$ for Cardiff
$D_1 = (1 – 0.42)[104{,}006 – (0.397)(0.14)(56{,}925)] = 58{,}849$ for South East Wales

Second-round gross local output
This is given as:

$Y_2 = vZ + wc\ D_1$

Total spending by students per annum, «Z», is given by the weekly student spending (£ 93.26) that multiplies the number of undergraduates (12,670) in residence for approximately 30 weeks and the number of graduates (2,464), in residence for approximately 40 weeks. Part-time postgraduates are excluded as it is assumed that most of them are from the locality and would already be in place. Therefore:

$Z = [(93.26)(30)(12,670)] + [(93.26)(40)(2,464)] = 44,640$ (approx.);

The proportion of student expenditures on goods and services in the locality, «v», has to take into account the spending outside the locality and the spending within the university. Therefore,

v = 1 – (spending outside the locality) – (spending within the university).

We saw in paragraph four that only 9.6% of total student expenditure took place outside Cardiff or South East Wales in 1994-1995 and it is safe and reasonable to assume that this percentage for both Cardiff or South East Wales will be the same as almost all student spending in the region takes place within Cardiff. In 1994-1995 for 60% of students (those living in private accommodation) the spending within the University equalled 14.4%. For the 40% of students living in University-owned accommodation this rose to 59.9%. Given the limited increase in University-owned accommodation and students, we assume these data unchanged in the financial year 2000-2001. Hence a weighted average of the two = [(60)(14.4) + (40)(59.9)] /100 = 32.6%. Therefore,

$v = 1- 0.096 - 0.326 = 0.58.$

In 1994-1995, using retention factors generated by Robson *et al.* (Robson *et al.* 1995), the proportion of staff spending on locally produced goods and services, «w», has been estimated as 0.28 for South East Wales and 0.31for Cardiff. We assume these factors unchanged in 2000-2001.

The marginal propensity to consume from the Family Expenditure Survey is estimated to be 0.90. Therefore:

$Y_2 = (0.58)(44,640) + (0.31)(0.9)(56,273) = 41,591$ for Cardiff
$Y_2 = (0.58)(44,640) + (0.31)(0.9)(58,849) = 42,310$ for South East Wales

Second-round local disposable income
This is given as:

$D_2 = (1 - t)(1-i)Y_2$

Therefore:

$D_2 = (1-0.42) + (1-0.14)(41,591) = 20,746$ for Cardiff
$D_2 = (1-0.42) + (1-0.14)(42,310) = 21,104$ for South East Wales

Third-round gross local output
This is given as:

$Y_3 = wcD_2$

Therefore:

$Y_2 = (0.28)(0.90)(20,746) = 5,228$ for Cardiff
$Y_2 = (0.31)(0.90)(21,104) = 5,888$ for South East Wales

Third-round local disposable income
This is given as:

$D_3 = (1 - t)(1-i)Y_3$

Therefore:

$D_3 = (1-0.42) + (1-0.14)(5,228) = 2,608$ for Cardiff
$D_3 = (1-0.42) + (1-0.14)(5,888) = 2,937$ for South East Wales

Fourth-round gross local output
This is given as:

$Y_4 = wcD_3$

Therefore:
$Y_4 = (0.28)(0.90)(2,608) = 657$ for Cardiff
$Y_4 = (0.31)(0.90)(2,937) = 819$ for South East Wales

Fourth-round local disposable income
This is given as:

$D_4 = (1 - t)(1-i)Y_4$

Therefore:

$D_4 = (1\text{-}0.42) + (1\text{-}0.14)(657) = 328$ for Cardiff
$D_4 = (1\text{-}0.42) + (1\text{-}0.14)(819) = 409$ for South East Wales

Fifth-round gross local output
This is given as:

$Y_5 = wcD_4$

Therefore:

$Y_5 = (0.28)(0.90)(328) = 83$ for Cardiff
$Y_5 = (0.31)(0.90)(409) = 114$ for South East Wales

Fifth-round local disposable income
This is given as:

$D_5 = (1 - t)(1\text{-}i)Y_5$

Therefore:

$D_5 = (1\text{-}0.42) + (1\text{-}0.14)(83) = 41$ for Cardiff
$D_5 = (1\text{-}0.42) + (1\text{-}0.14)(114) = 57$ for South East Wales

Sixth-round gross local output
This is given as:

$Y_6 = wcD_5$

Therefore:

$Y_6 = (0.28)(0.9)(41) = 10$ for Cardiff
$Y_6 = (0.31)(0.9)(57) = 16$ for South East Wales

Sixth-round local disposable income
This is given as:

$D_6 = (1 - t)(1\text{-}i)Y_6$

Therefore:

$D_6 = (1\text{-}0.42) + (1\text{-}0.14)(10) = 5$ for Cardiff
$D_6 = (1\text{-}0.42) + (1\text{-}0.14)(16) = 8$ for South East Wales

Seventh-round gross local output
This is given as:

$Y_7 = wcD_6$

Therefore:

$Y_7 = (0.28)(0.9)(5) = 1$ for Cardiff
$Y_7 = (0.31)(0.9)(8) = 2$ for South East Wales

Seventh-round local disposable income
This is given as:

$D_7 = (1 - t)(1-i)Y_7$

Therefore:

$D_7 = (1-0.42) + (1-0.14)(1) = 0$ for Cardiff
$D_7 = (1-0.42) + (1-0.14)(2) = 1$ for South East Wales

Eighth-round gross local output
This is given as:

$Y_8 = wcD_7$

Therefore:

$Y_7 = (0.28)(0.9)(0) = 0$ for Cardiff
$Y_7 = (0.31)(0.9)(1) = 0$ for South East Wales

Eighth-round local disposable income
This is given as:

$D_8 = (1 - t)(1-i)Y_8$

Therefore:

$D_8 = (1-0.42) + (1-0.14)(0) = 0$ for Cardiff
$D_8 = (1-0.42) + (1-0.14)(0) = 0$ for South East Wales

Total Gross Local Output (GLO) generated by Cardiff University expenditure in the financial year 2000-2001 is to equal to the sum of the outputs for each round spending.

Table 3. Estimated Gross Local Output for Cardiff and South East Wales in the financial year 2000-2001 (£ 000)

	Cardiff	South East Wales
Round 1	99,565	104,006
Round 2	41,591	42,310
Round 3	5,228	5,888
Round 4	657	819
Round 5	83	114
Round 6	10	16
Round 7	1	2
Total	147,135	153,155

Therefore Cardiff University expenditure in the financial year 2000-2001 has the effect of generating a gross local output in Cardiff of 147 million pounds and 153 million pounds in South East Wales. In the financial year 1994-1995 it was, respectively, 97 million pounds in Cardiff and 102 million pound in South East Wales (Cooke and Huggins 1997). As we have already said, the university expenditure in a given financial year doesn't necessarily produce all its effect in the same financial year and may well go beyond a one-year time.

Total local disposable income (LDI) generated by Cardiff University expenditure in the financial year 2000-2001 is to equal to the sum of the incomes for each round spending:

Table 4. Estimated Local Disposable Income for Cardiff and South East Wales in the financial year 2000-2001 (£ 000)

	Cardiff	South East Wales
Round 1	56,273	58,849
Round 2	20,746	21,104
Round 3	2,608	2,937
Round 4	328	409
Round 5	41	57
Round 6	5	8
Round 7	0	1
Total	80,001	83,365

Therefore Cardiff University expenditure in the financial year 2000-2001 has the effect of generating local disposable income in Cardiff of 80 million pounds and 83 million pounds in South East Wales. In the financial year

1994-1995 it was, respectively, 53 million pounds in Cardiff and 55 million pound in South East Wales (Cooke and Huggins 1997). As we have already said, the university expenditure in a given financial year doesn't necessarily produce all its effect in the same financial year and may well go beyond a one-year time.

The full multiplier for GLO (all rounds):
This is given as:

$Y_f/Y_1 = (Y_1+Y_2+Y_3+ \ldots)/Y_1 = 1+(1+wc(1-t)(1-i)+\ldots)Y_2/Y_1 =$
$= 1+Y_2/[1-wc(1-t)(1-i)]Y_1 =$
$= 1 + 41{,}591/[1-(0.28)(0.9)(1-0.42)(1-0.14)](99{,}565) = 1.48$ for Cardiff
$= 1 + 42{,}310/[1-(0.28)(0.9)(1-0.42)(1-0.14)](104{,}006) = 1.47$ for South East Wales

The full multiplier for Local Disposable Income (all rounds):
This is given as:

$D_f/D_1 = (D_1+D_2+D_3+ \ldots)/D_1 = 1+ (1-t)(1-i)(1+wc(1-t)(1-i)+\ldots)Y_2/D_1 =$
$= 1+(1-t)(1-i)Y_2/[1-wc(1-t)(1-i)]D_1$
$=1+(1-0.42)(1-0.14)(41{,}591)/[1-(0.28)(0.90)(1-0.42)(1-0.14)](56{,}273)= 1.42$ for Cardiff
$=1+(1-0.42)(1-0.14)(42{,}310)/[1-(0.28)(0.90)(1-0.42)(1-0.14)](58{,}849)= 1.41$ for SEW

In the following table we summarize our main findings about the effect of the operation of Cardiff University on the City of Cardiff and South East Wales in the financial year 2000-2001 and will compare the results with the financial year 1994-1995:

Table 5. The effect of the operation of Cardiff University on the City of Cardiff and South East Wales in the financial years 2000-2001 and 1994-1995 (£ 000)

	Cardiff		South East Wales	
	1994-1995	2000-2001	2000-2001	1994-1995
Expenditure base (E)	85,802	134,062	134,062	85,802
first round GLO (Y_1)	64,269	99,565	104,006	67,079
first round LDI (D_1)	36,343	56,273	58,849	37,745
second round GLO (Y_2)	28,785	41,591	42,310	30,157
second round LDI (D_2)	14,358	20,746	21,104	15,042
final GLO (Y_f)	97,192	147,135	153,155	102,111
final LDI (D_f)	52,764	80,001	83,365	55,227

GLO expenditure base multiplier Y_f/E	1.13	1.10	1.14	1.19
LDI expenditure base multiplier D_f/E	0.61	0.60	0.62	0.64

The local income impact analysis we have just developed can be extended in a manner that allows the generation of employment figures that although fairly reliable, must be regarded as less accurate than the income effects on which they are based. Cardiff University contribution to local employment can be divided in two parts: 1) direct employment associated with the University (2,747 employees in 1994-1995, 2,962 in 2000-2001); 2) additional jobs created by the income multiplier effects, elsewhere in Cardiff and South East Wales.

Using the multipliers estimated by Cooke and Huggins (Cardiff employment multiplier = 1.22; South East Wales employment multiplier = 1.24), we have:

Total University related employment in Cardiff in 2000-2001 is (1.22)(2,962)= 3,614;

Total University related employment in SEW in 2000-2001 is (1.24)(2,962)= 3,673;

Therefore the methodology suggests that as well as sustaining 2,962 direct employees, Cardiff University is responsible for creating and sustaining some 652 additional jobs in Cardiff and a further 59 in the rest of South East Wales. These figures put Cardiff University among the largest employers in Wales and according to the figures available in 1997 as the seventh employer.

Table 6. Largest employers in Wales

1	South Wales Electricity	6,658
2	Welsh Water Group	6,500
3	Tesco	5,045
4	Asda	4,500
5	Sony	3,500
6	British Gas	3,000
7	Cardiff University	2,747
8	Ford	2,500
9	Lloyds Bank	2,500
10	Barclays Bank Cymru	2,400

Source: Western Mail, 11 October 1995, in Cooke and Huggins (1997).

Our exercise has updated the results of Cooke and Huggins (1995) study and has shown that it is possible to estimate fairly accurately the

economic impact of Cardiff University on its locality and sub-region. Our exercise suggests that in the 2000-2001 period the University had the effect of creating a total local income of £ 147.14 million pounds in Cardiff and £ 153.16 million pounds in South East Wales as a whole. When taxes, pension contributions, national insurance, etc. are taken into considerations the remainder amounts to a local disposable income of £ 80 million pounds in Cardiff and £ 83.37 million pounds in South East Wales. The modelling exercise also suggests that well as supporting 2,962 direct employees, its consumption patterns generate a further 652 indirect jobs in Cardiff and 59 in the rest of South East Wales.

7. Cardiff University «knowledge impact»: destinations of graduates or «people impact»

If we recall our definition of «knowledge» as «ability to produce an effective action in a consensual domain» that we gave in a previous section, then we believe that the destination of graduates from Cardiff University may be a valuable hint of its ability to produce a «knowledge impact» on its region and locality.

In September 2001 the *Centre for Advanced Studies* at Cardiff University collected information (Coombes, Page and Wilson 2002) on graduates from a postal survey asking for information about their activities fourteen months after graduation. The survey was mailed to the entire cohort of 1999/2000 UK domiciled full-time graduates of Welsh higher education institutions who obtained a first degree or a postgraduate qualification such as a doctorate, Masters or Higher Bachelor degree.

Cardiff University 1999/2000 cohort includes 3,299 students. The response rate to the survey (a single mailing) was 21.8% and so 695 returns were received. The following table shows the main activities of graduates fourteen months after graduation:

Table 7

Main activities of graduates from Cardiff University – 1999/2000	
Full time employment	54.7%
Full time employment still seeking graduate level job	13.1%
Part-time employment	2.6%
Part-time employment still seeking graduate level job	2.3%
Self-employed	1%
Full-time study	19.1%
Unemployed seeking work	2.5%
Unemployed not seeking work	4.7%

The full time employment rate fourteen months after graduation is the highest among Welsh higher education institutions and huge differences exist depending on the subject of study: medicine (87.8%), computer science (77.9%), engineering (71.2%) and mathematics (66.7%) graduates were most likely to be in full-time employment; media, arts and design (35.4%), humanities (36.9%), social sciences and politics (38.3%) were among the less likely to be in full-time employment. High unemployment levels were found among those graduates who had studied a combination of subjects (15.6%), arts (11.7%) and humanities (10.3%). Low unemployment rates were found among those who had studied medicine and related subjects (3.4%), education (3.4%) and engineering (4.7%).

Even if we register differences depending on the subject of study, the mean percentage of *unemployed seeking work* (2.5%) is extremely low and may be below the frictional and natural unemployment rate we would expect even in a situation of full employment. The data allow us to conclude that, in general, graduates from Cardiff University do not face an intellectual unemployment phenomenon.

The interaction among students and local economy is quite intensive during the years spent at the University, especially through work experience, and we believe it's a very relevant sign that Cardiff University is involved in the production of that «social» type of knowledge we have already defined in a previous chapter. With work experience increasingly highly valued by employers, it's encouraging to find that 85.8% of graduates has gained some form of work experience:

Table 8

Work experience undertaken by graduates – cohort 1999/2000 – at Cardiff University (all graduates N = 2605)	
Part-time job while at University	*49.3%*
Vacation placement	*24.7%*
No work experience	*14.2%*
Teaching practice or clinical placement	*11.4%*
Sandwich year	*7.3%*
Industrial placement as part of the course	*5.4%*
Graduate placement	*2.3%*
Other	*16.6%*

«Other» includes placements at secondary school, voluntary work, work abroad and other types of work experience.

The number of graduates from Cardiff University with «No work» experience at all is then 14.2%. According to the national survey of Italian graduates by the «Consorzio Interuniversitario Almalaurea», a huge and

methodologically well founded investigation presented in Bologna in March 2004, that same data is 37.0% for Italy, and was 42.0% in 1998[2]. The number of Italian graduates with some form of work experience is estimated to be 51.0% as opposed to 85.8% in Cardiff.

It's interesting to see that the majority of graduates in Cardiff thought that work experience was an important asset when seeking employment, with 33.8% seeing it as «important» and 55.2% as «very important». Employers seemed to have a similar view; in fact there is a positive relationship between work experience and employability:

Table 9

Employment activity in September 2001 by work experience - graduates cohort 1999/2000 – at Cardiff University

	with work experience	with no work experience
full time employment	50.3%	40.4%
unemployed still seeking work	3.4%	5.4%

As far as employment locations of graduates is concerned, it may be interesting to observe that South East Wales experienced a net inflow of graduates and that graduates originally domiciled in South East Wales exhibited a strong attachment to home region, with 71.8% of them having an employment there.

As far as quality of employment is concerned 68.4% of the graduates working in South East Wales were in graduate level employment compared to 66.9% in Greater London and 70.2% of all those working in England.

As with the graduate survey, the *Centre for Advanced Studies* (Coombes, Page and Wilson 2002) conducted a survey on employers. The sample of graduate employers was drawn from the employers of the respondents from the graduate survey. Overall, the sample comprised 1,424 graduate employers from Wales and outside Wales. Response rate, after two «remainder to return questionnaires», was 17.7% and so 252 returns were received. Corresponding with the large proportion of graduates in the graduate survey who were employed in South East Wales, a quarter of employers (24.3%) were also located in the same region, 47.6% in Wales and 52.4% in the rest of UK. Around four out of ten respondents were large organisations with over 500 employees; 19% of respondents had less than 25 employees while overall 55% of the returns were from organisations with more than 25 and less than 500 employees. Just over 36% of respondents were from public administration, education and health, 17.4% from busi-

[2] Cammelli A. (2004), *La qualità del capitale umano delle università*, introduction to Consorzio Interuniversitario Almalaurea (2004), *Condizione occupazionale dei laureati, indagine 2003*, <http://www.almalaurea.it/universita/profilo/profilo2002/premessa.shtml> (01/09).

ness services with a further 22.4% from architecture, engineering and other services.

Attributes that employers consider to be most important to their organisation are a very important indication of why «individualistic accumulation of knowledge» is not a valuable answer to both employers' needs and students' expectations:

Table 10

Attributes that employers consider to be most important to their organisation	
communication skills	58.7%
team working skills	50%
showing initiative	45.6%
understanding customer needs	39.7%
problem solving skills	38.5%
ability to learn	38.5%
organisational skills	29.4%
literacy	27.4%
basic IT skills	26.6%
knowledge of subject area	24.6%
arithmetical skills	23%
job specific skills	22.6%
management skills	20.6%
organising own learning/development	15.9%
practical skills	13.1%
advanced skills	12.7%
welsh language skills	4.8%
foreign language skills	2.8%

The five by far most important attributes (communication skills, team working skills, showing initiative, understanding customer needs) cannot, by definition, be developed through «individualistic accumulation of knowledge» but require, on the opposite, a continuous practice that can be developed only through social interactions inside a community sharing a common ground of beliefs and behaviours or what we defined in more abstract terms as a «consensual domain».

Traditional western higher education has been used to develop students' attributes that are now receiving far less appreciation by employers, at least in respect to the others attributes we mentioned above. This is the case, for example, of «national language skills», «knowledge of subject ar-

ea» or «arithmetical skills». And it would be wrong to think that employers are demanding more practical skills to the detriment of more theoretical «knowledge», not fully realizing the importance of this last one, because practical attributes, such as «job specific skills», «practical skills», «advanced IT skills» and «foreign language skills» receive even less appreciation than theoretical knowledge. What seems to make a real difference for employers, in fact, are not «practical skills» (opposed to theoretical ones) but «social skills» such as «communication skills», «team working skills», «showing initiative», «understanding customer needs».

It may be interesting to observe that a «lack of work experience» was the main disadvantage for recruiting graduates in the eyes of Welsh employers (67.6%), followed by «high expectations with regard to career development» (58.8%). These data are a further hint of the importance of work experience during the university years and of the dangers of what we defined in a previous section as «positional competition» or positional expectations. «Demand for higher wages» that, according to human capital theory, should be the main «disadvantage or cost» of recruiting graduates, was considered a disadvantage only by 32.4% of respondents in respect to the above mentioned percentages of 67.6% and 58.8% (the percentage is even lower – 20.4% - for employers based outside Wales who generally experienced far higher graduate wage levels than Wales).

The methods of screening applicants seems to reveal a low level of effective positional competition in higher education and a high interest in what we have defined «knowledge as ability to produce an effective action»: in fact, *relevant experience* was the most important criteria used by employers to screen out applicants for a post (68.6%), followed by *work experience* (55.1%), while *university of study* (4.2%) and *A-level grades* (18.6%) received far less attention.

The employer survey also revealed something very peculiar to graduate recruiters in Wales. In Wales, 72.6% of employers would contact *a local university* compared to 41.7% of employers based outside Wales. This could suggest that Welsh employers have a preference for Welsh domiciled graduates.

The employer survey also investigated linkages between employers and Higher Education Institutions (HEIs). In fact, a recent report by the Department for Skills and Education found that partnerships between employers and higher education are valuable in promoting work-related learning and for improving the quality and quantity of such experiences (DfES 2002). The National Assembly for «Wales' strategy statement» (2002) also encouraged the HE sector to work closely with local business and to respond to their needs. The Strategy also emphasised that academia no longer works in isolation from business, industry and the public services and has a responsibility for enhancing the employability of graduates.

The strategy supported by the policy maker seems to be very well endorsed by both employers and HEIs: the majority of employers supported

links with HEIs with 61% of Welsh employers and 62% of non-Wales based employers having links with HEIs:

Table 11. Linkages between employers and Higher Education Institutions

Type of link	Companies based in Wales	Companies based outside Wales
Links with individual departments	77.3%	67.1%
Links with individual members of staff	44.5%	46.1%
Links with careers services	45.5%	43.4%
research and development links	39.4%	34.2%
involvement in academia/industry networks	34.8%	43.4%

A difference emerged between SMEs and large organisations. In fact SMEs were less likely to have developed links with higher education institutions compared to larger organisations. The only field in which SMEs seemed to be slightly better than larger organisations was *links with individual members of staff*. It is in fact possible to hypothesise those SMEs, thanks to their less formalised and personal way of establishing links, may have an advantage in respect to larger organisations in keeping personal links:

Table 12. Linkages between employers and Higher Education Institutions

Type of link	SMEs	Larger organisation
Links with individual departments	68.1%	74%
Links with individual members of staff	47.2%	46.6%
Links with careers services	34.7%	53.4%
Research and development links	27.8%	46.6%
Involvement in academia/industry networks	30.6%	50.7%

A large majority of employers (66.7%) favoured closer links between universities and employers with again a large difference between SMEs and larger companies. In particular, 82.5% of larger companies favoured closer links compared to 69.3% of SMEs.

When asked to specify the form that links should take, employers were particularly keen to develop better communication networks with higher education institutions and for universities to have a greater understanding and knowledge of business needs and skill requirements. Other suggestions included:

- having the opportunity for employers to talk to students;
- providing advice to institutions on course design;

- giving students experience during studies;
- collaborating in research project;
- creating a database of graduates and their needs;
- employer/HEI forums;
- information sharing.

But what employers seem to favour most to strength links with HEIs is graduate work experience itself: since 47.6% of companies would support the *establishment of more work placements* and a further 23% would like to see an *increasing number of sandwich placements*. Four out of ten employers even supported *greater employer input into courses* while *university-business incubator* was supported only by 15.1% of respondents.

The experience gained from work placements appeared to be highly valued by employers as they provide the opportunity for graduates to acquire social skills and give employers the opportunity to assess, without any obligations, potential future recruits. Indeed only 21% of employers rated work experience as either *unimportant* (14%) or *very unimportant* (7%) while eight out of ten rated it as either *important* (51%) or *very important* (28%).

In line with such findings, 72.4% of all employers had taken part in some form of graduate/student work placement scheme and employers based in Wales were more likely to have taken part in work placements compared to employers based elsewhere: 75.7% of Welsh employers compared with 69.9% of non-Welsh employers had offered graduate/student placements. Similarly, employers from larger organisations were more likely to have been involved in work experience placements with 76% of larger organisations involved in such schemes compared with 69.5% of SMEs.

When they did participate in graduate/student placements, 48.7% of Welsh employers had taken part in recognised placement schemes compared with 26.7% of employers based outside Wales.

Consistent with the views of employers, the majority of graduates (79%) have also recognised the importance of work experience, considering practical work experience as important or very important when searching for employment.

8. Cardiff University «knowledge impact»: a broader view

Data showed that Wales' ability to establish associational links between HEIs and employers is superior to the rest of England and as in the case of Twente that may well derive from being a peripheral region.

The potential for innovating in the periphery was recently acknowledged by «The Times Higher Education Supplement» when it said: «Wales has the supreme good fortune to be far away from Whitehall. It has been possible for the universities, colleges and funding councils there to work

away quietly at devising a system for post-compulsory education without too much attention or interference from the centre […] It is smaller and its institutions more homogeneous than those in England»[3].

Cardiff University had to face the social and economic legacies of the once-dominant coal and steel industries. These industries were heavily reliant on external capital and an immigrant business class with few ties to the localities in which it invested. When they ceased to dominate the regional economy, regional and local poly makers couldn't rely on an indigenous business class or on local capital to design an industrial policy and manual skills, developed among workers with little or no scope for career advancement, didn't help.

Given the absence of a strong internal dynamic it was a natural and almost unavoidable choice to look for foreign direct investments (FDIs): in the early 1990s, Wales, with just 5 per cent of the UK population was said to be «the number one performing region, attracting around 20% of new foreign projects entering the UK annually»[4]. Wales became a living example of regional and local ability in attracting FDIs. These include: Ford, Valeo, General Electric, Bosch, Northern Telecom, Trw.

Contrary to the popular stereotype that portrays these branch plants as low-pay, low-skill, assembly-based operations, with limited linkages with firms and training institutions in the regional economy, Philip Cooke documented (Cooke and Morgan 1998) that in the case of Wales they had a large positive effect. It is, in fact, possible to show that «the most important sources of low pay in Wales are not branch plants – as the stereotype would have it – so much as the public and private service sectors»[5] and many of Wales' branch plants established innovative interactions with local actors, beginning to act as learning laboratories: «there is more scope for innovative activity at the level of branch plant than is commonly thought, both within the plant itself […] and between the plant and its local milieu (through interactions with training collages, suppliers, regional development agencies, *universities*, etc.)»[6]. Even the low level of R&D that is registered in areas where branch plants are located may be largely overestimated. Many of these plants and SMEs around them are, in fact, leading units in innovation but «R&D is recorded not in branch plants but in registered offices, while many SMEs undertake development work but rarely account for it sepa-

[3] «The Times Higher Education Supplement», 1996; in Cooke P. and Morgan K. (1998), *The associational economy*, Oxford University Press, Oxford (UK), p. 145.
[4] Hill S. and Munday M. (1994), *The regional distribution of foreign manufacturing investment in the UK*, Macmillan, London; in Cooke P. and Morgan K. (1998), *The associational economy*, Oxford University Press, Oxford (UK), p. 145.
[5] Cooke P. and Morgan K. (1998), *The associational economy*, Oxford University Press (UK), p. 148.
[6] Cooke P. and Morgan K. (1998), cit., p. 150.

rately»[7]: it is the case of General Electric's aircraft maintenance plant, which first in the GE empire introduced the concept of «supervisory-less» factory, through the use of autonomous work teams; the radical productivity improvement at Ford's Bridgend plant is a second paradigmatic example.

Cardiff University played a part in the development of innovative clusters around the FDIs-driven industrial complexes in automotive and electronic engineering, acting as a local host for joint research and development programmes with automotive companies such as Lucas and Rover. Moreover, as we already saw in a previous section, in Wales large companies are the most keen on employing graduates.

The automotive sector R&D undertaken by the University focused on systems engineering, new materials and robotics. The electronic sector R&D undertaken by the University focused on IT, semiconductors and magnetics. It is estimated that universities in Wales conduct some six million pound industrial research per year, of which two million pound is basic research.

A survey conducted by Cooke P., Davies S. and Huggins R. (1995), on 200 technology based firms in South Wales, revealed that 30% of the company in the locality use the technical services of higher education or further education colleges and Cardiff University was cited almost twice as any other institution.

The survey also revealed that the significant majority of links with universities and higher education institutions are at the local or regional level, rather than national or international. Under this assumption, in March 1996 the University of Cardiff launched the «Cardiff University Innovation Network» (CUIN). The main activity of CUIN, that is still active today, is to hold periodical meetings among companies and University personnel to favour and encourage networking. Since its creation 5,000 people in total have attended more than 60 events for local businesses and innovators. According to Graham Waters, a regular presence at CUIN meetings and director of *Pentwyn Splicers*, which produces devices for joining thread, typically used in the textile and carpet industry, «we joined the Network hoping to pick up the odd idea, and the odd contact. The reality was different. Our links with the University are now so close that any new idea, which I may have, is automatically "mapped" in my mind on my picture of what is available in the University. Cardiff inputs, whether practical or intellectual, have become part of my innovation process. That's the truth…»[8].

The Cardiff Business and Technology Centre (CBTC) was created in 1987 to provide land owned by Cardiff University to new innovative firms (software companies, computer and communication companies, medical companies involved in R&D); to provide assistance to existing SMEs to modernise and diversify; to promote technology transfer. Even if it may be

[7] *Ibid.*
[8] Cardiff University Innovation Network, <http://www.innovation-network.org.uk> (01/09).

argued that the main success of CBTC, like for many such centre and parks, derives from the quality of its buildings and surroundings more than to closeness to University, nonetheless a survey conducted in 1995 showed that 63% of Centre's tenants gave contracts to University departments to perform work for them, or to use the University's facilities and 37.5% of companies were University spin-outs (Griffiths and Hampson 1995).

As in the case of the University of Twente, links with the local economy didn't damage quality of research. The latest British Government's Research Assessment Exercise (RAE 2001), which is undertaken every five years, ranks Cardiff University seventh of 106 British universities and colleges (just after Cambridge, 1st, Imperial College, 2nd, Oxford, 3rd, London School of Economics, 4th, Warwick, 5th, University College London, 6th). The eight places higher than in the 1996 assessment underlines the growing reputation of Cardiff as one of the leading UK universities. What may be worrying, on the opposite and from a regional point of view, is the widening gap between the University of Cardiff and other Welsh universities. The assessment (RAE), which is essentially based on publishable research, is a crucial input into what is termed QR funding and accounts for about 90% of the research funding awarded to universities: Cardiff University has by far the largest share, creaming off 41% of the entire Welsh QR research budget with only 19.9% of Welsh students (Morgan 2002). Moreover, in 2001 the Welsh Development Agency awarded «Centre of Excellence» status, for extra money, to seven specialist research centre at the University of Cardiff: the Manufacturing Engineering Centre, the Centre for Sustainable Energy and Process Management, the Wolfson Centre for Magnetics Technology – all in the School of Engineering; the Centre for Multidisciplinary Microtechnology in Physics and Astronomy and Engineering; the Centre for Research in the Built Enviroment in Architecture; the Centre for Pest Management and Ecotoxicology in Biosciences; and the Centre for Advanced and Intelligent Systems in Computer Science.

Bob Morgan (2002) argues that RAE and «the concentration of effort in achieving published research, however, can result in high opportunity costs in terms of the contributions institutions can make to local economic development»[9], especially in Wales. Morgan's article and argumentation may be fascinating in its distinction between an «elite model» of university, focused on publishable research and global issues, and an «outreach/diffusion oriented model», focused on teaching, building of a social capital[10] and local is-

[9] Morgan B., (2002), *Higher education and regional economic development in Wales: An opportunity for demonstrating the efficacy of devolution in economic development*, «Regional Studies», 2002, n. 36, p. 68.

[10] «Universities can play a key role in the building of social capital. It requires a wider view of universities, however, as more than just places of learning and research. Universities must be institutions which act as catalyst for civic engagement and collective action and networking» (Morgan B., 2002, op. cit., p. 66).

sue, but Cardiff University (like the University of Twente) proves that under the «Strategic Science regime» (Arie Rip 2002) the distance between scientific research and eventual applications disappears and a world-level publishable research may well need and benefit local economy, avoiding any traditional dichotomy local/global or basic research/applied research[11].

Table 13. Higher Education and Regional Development

Elite model	Outreach/diffusion oriented model
Research and development	Social reproduction
Technology transfer	Tying down the global
New firm development	Social inclusion
Academic entrepreneurs	Social capital development
Formulation of economic strategy	

But even Morgan must admit «the question was raised as to whether an institution of higher education can, in the long run, produce excellent teaching results without teaching staff being involved in research»[12].

It is, anyway, undeniable that the «high rated research University of Cardiff» is paying due attention to local and regional economic needs. The Research Assessment Exercise 2001 gave the highest rating to The School of Journalism, Media and Cultural Studies, ranking it in the top three departments in the UK, and the City of Cardiff is hosting a vital and booming media cluster. A survey of Cardiff media industry (Cooke and Hughes 1999) revealed, in fact, a very knowledge intensive cluster of firms producing on- and off-line products such as CDs composed of film and TV clips for entertainment, CD-interactive musical instrument tutoring, geographical information systems, financial trading CD databases, media business CD databases, vocational trading CDs, Web Page design, computer graphics, animation and digital TV.

Following 1990s' deregulation[13], Cardiff Bay media cluster was stimulated by the rise of independent TV, directly through spin-offs from traditional TV programme producers or indirectly as part of a growing market.

[11] «The Research Assessment Exercise is essentially based on the amount of published research in academic journals. Should this be the sole goal for the academic research community in Wales, however, or should there be a grater emphasis on exploiting academic talent in Wales for the improving of Welsh economy? This is not to say that the research community should become too parochial. The challenge surely is to device a system that allows all universities in Wales to develop a research capability that will contribute to the development of the Welsh economy, whilst still being part of the UK's research community» (Morgan B., 2002, op. cit., p. 70).

[12] Morgan B., (2002), op. cit., p. 71.

[13] The UK Broadcasting Act of 1990 required broadcasters such as the BBC to outsource 25% of TV production to independent production companies and it is because of this deregulatory

Even if we agree that the main reasons for the rise of a media industry in Cardiff Bay rely in Welsh language, cheap rents and new buildings in a lovely Bay (Cooke 2002: 153-154), Cardiff University provided the necessary young and educated people, the cultural climate they need to be creative, and acted as a responsive institution by updating and re-designing its long lasting Centre for Journalism Studies (founded in 1970).

«Cardiff University Strategic Plan 2001» indicates as «aim three» - titled *the Univerity and the region* – «to make a major contribution to the economic, educational and cultural life of Wales and of Cardiff, and thereby promote the strengths of the region in the UK and the world» as «the higher education sector is a major player in economic development and, as a research-led University, Cardiff has a central role to play in wealth creation and in today's knowledge-based society […] The University will promote entrepreneurship and continue to forge productive links with other economic development agencies in the region»[14].

We have already discussed and showed why «Strategic Plan 2001 aim three» - *the Univerity and the region* – is not a contradiction with Cardiff's vision «to be a world class university» and Cardiff University's *aim one* «to pursue research of international excellence recognised for its quality and impact on both academic and user communities, measured by a place in the top five UK universities when judged by accepted indicators»[15].

What may, indeed, by true is that, at least in the short run, competition among Welsh Universities[16], in order to receive a better RAE ranking, may produce inequalities among them and even a «winner takes all» situation: «the majority of institutions in Wales, under the present arrangements, have no or very little research to plan. Serious considerations therefore need to be given to develop a research strategy for all Welsh institutions. The major issue here that needs to be addressed is the role of Cardiff. The argument is

Act that a substantial number of independent media and, subsequently, multimedia firms, emerged in Wales. The sector is overwhelmingly made up of small and very young businesses with less than ten staff and micro businesses and self-employed/freelancers. The information regarding the numbers of suppliers working in the new electronic media is also likely to be volatile on account of the rapid development of technology and the market, and the relatively low cost of entry at the bottom end. Welsh broadcasters, S4C, BBC Wales and HTV are the customers for most activities in these areas (for a theoretical discussion about Cardiff new-media cluster see De Laurentis C., Cooke P., and Williams G., *Barriers to the knowledge economy-new media cluster in the periphery*, paper presented at the Regional Studies Association International Conference, Scuola Superiore Sant'Anna, Pisa, 12th – 15th April 2003).

[14] As submitted to the Higher Education Funding Council for Wales and available on the web <http://www.cf.ac.uk/> (01/09).

[15] *Ibid.*

[16] Wales has 13 HEIs with a total of 92,747 students (number of students in 2000/2001 in brackets): Glamorgan (14,541), Aberystwyth (9,067), Bangor (8,699), Cardiff University (18,459), Lampeter (5,148), Swansea (11,715), Cardiff Medical (2,908), UWI Cardiff (7,610), UWC Newport (7,031), NEWI (4,337), Swansea IHE (4,034), Trinity Camerthen (1,544), Welsh CMD (580).

often used that Wales needs one major world-class research university. […] If it is the case […], then funding arrangements have to be such that other equally important elements of university provision are protected»[17].

9. Conclusion

The present chapter studied the regional and local economic impact of the University of Cardiff dividing its effects into two major sides: «expenditure impacts» and «knowledge impacts».

The chapter presented the major tools and methodologies available in the literature to assess the two sides of regional and local economic impact.

It measured the «expenditure impact» in the financial year 2000-2001 through a Keynesian multiplier model developed by the *Centre for Advanced Social Studies* (CASS) in order to measure that same impact in the financial year 1994-1995.

According to the conceptual framework we developed in a previous chapter to explain intellectual unemployment, the present chapter assessed the university's «knowledge impact» through two main directions: 1) employment and destination of graduates or «people impact»; 2) kind of knowledge produced.

Our results suggest that in the 2000-2001 period the University had the effect of creating a total local income of £ 147.14 million pounds in Cardiff and £ 153.16 million pounds in South East Wales as a whole. When taxes, pension contributions, national insurance, etc. are taken into considerations the remainder amounts to a local disposable income of £ 80 million pounds in Cardiff and £ 83.37 million pounds in South East Wales. The modelling exercise also suggests that as well as supporting 2,962 direct employees, its consumption patterns generate a further 652 indirect jobs in Cardiff and 59 in the rest of South East Wales.

As far as the «knowledge impact» is concerned Cardiff University's graduates enjoy a full-employment situation with a less than frictional or natural level of unemployment (2.5%) fourteen months after graduation.

According to our conceptual framework, data available allow us to classify Cardiff's higher education system as very similar to the University of Twente: «non-active» positional competition and «social knowledge» production.

It is possible to conclude that positional competition is «non-active» because: 1) only 4.2% of employers declared that the university of study was a relevant piece of information during the screening process; 2) only 18.6%

[17] Morgan B., (2002), op. cit., p. 70.

of them said that *A-level grades* is an important criteria for selection. On the opposite *relevant experience* was the most important criteria (68.6%), followed by *work experience* (55.1%).

Nonetheless, the regional leadership that Cardiff University is acquiring in research, as Bob Morgan (2002) pointed out correctly, may well reveal the very early emerging of a positional competition in the Cardiff case that was, on the opposite, absent in Twente. The British higher education system has, in fact, a long lasting tradition of positional competition that makes it, in general, a very different system from the Netherlands (in our diagram we put NL and UK in two different quadrants just to take into account the «positional variable» but we considered both of them as producing a social kind of knowledge).

There may be no doubts in classifying Cardiff University's «knowledge production» as «non-individualistic» or «social» and that because of the thick, institutionalised, frequent and fruitful interactions among all the territorial actors. South East Wales was one of the four European cases presented by Philip Cooke and Kevin Morgan (1998) in order to theorize their *Associational economy* (chapter VI – Wales Global-Local Interaction), together with Basque Country, Emilia Romagna and Baden-Wurttemberg: Cardiff University's students (85.8% of them) gain work experience during their studies, in most of the cases through institutionalised schemes; *communication skills* (58.7%), *team working skills* (50%), *showing initiative* (45.6%), *understanding customer needs* (39.7%) are by far the most appreciated attributes by employers and 77.3% of companies based in Wales have links with University departments. These are just three of the many examples we cited in previous sections to sustain our argument.

We conclude our chapter saying that the University of Cardiff with its city and region is a second living and paradigmatic example, like the University of Twente, of a peripheral university able to achieve both world-class research and local economic relevance, starting from very unfavourable conditions.

Both of them have been able to solve the typical global-local dilemma of many universities and have become the «brain» of their regions and localities. Their next, future and much harder challenge will be to balance «market competition» and «knowledge integrity»: «the number of claims on a university is unlimited. Therefore, university authorities must retain a balance between the change to market competition and their role as places of special competence and knowledge»[18].

[18] Cooke P. and Huggins R. (1997), *The economic impact of Cardiff University: innovation, learning and job generation*, «Kluwer Academic Publishers», April 1997, p. 337

Chapter 4

Governance shifts in higher education: a cross national comparison[1]

1. Introduction

The increasing importance of knowledge as a driver of growth in the context of global economy has already been discussed in a previous chapter.

That increased importance of knowledge has produced major pressure and changes on higher education systems across the world with specific reference to «tertiary education», as defined by OECD.

Tertiary education has, in fact, a critical role in supporting knowledge-driven economic growth strategies and the construction of democratic, socially cohesive societies.

To successfully fulfil their traditional functions such as education, research and service to the community, to satisfy their increasing stakeholders, to respond to the numerous, new and multifaceted demands placed on them, HEIs across the world are transforming themselves and sometimes «reinventing» themselves.

According to the World Bank (2002) education policy makers are facing a numerous set of questions. Here are some of them:

1 Nature of education and training experience

- How can sufficient direct communication and human interaction on wired campuses and in Web-based courses be promoted in order to build up critical thinking and social learning? What is the appropriate mix of face-to-face and online teaching?
- Can a student choose effectively an adequate academic path among so many unregulated and always changing courses and among so different higher education institutions?

[1] A shorter and revised version of this chapter has been published in «European Educational Research Journal», 2006, Vol. 5, n. 1, pp. 18-37.

- What are the prospects for humanities and social sciences in a market-driven higher education system?
- How can a strong sense of identity and community be maintained, and knowledge useful on local markets produced in HEIs that serve international and heterogeneous student populations?

2. Academic management
- What types of mechanisms and arrangements are desirable and effective for introducing flexibility and strengthening the system's capacity to change, adapt and innovate rapidly? How can stability be maintained in an ever-changing environment? What is the future of tenure?
- How can interdisciplinary and multidisciplinary be promoted across traditional faculty and program boundaries?
- How should program and courses for part-time students and returning graduates be organized? Should they be integrated into regular programs or organized as separate programs?

3. Use of technology
- What is the appropriate balance between «high tech» and «high touch» (degree of human interaction)?

4. Financing
- How can a booming tertiary education sector be financed sustainable?
- How can tertiary education keep an international perspective if financial sources are becoming increasingly regional and even local?
- How can tertiary education institutions remain viable as financial support shifts to consumers, faculty members become more independent and degrees fade in importance?

5. Governance
- How can HEIs' governance take into account the increasing number of stakeholders and demands with a decentralised set-up (that is with autonomous faculties and departments)?
- How can a sense of academic mission be maintained in an environment of emerging corporate behaviours?
- How can academic freedom and long lasting integrity be preserved as corporate behaviours and corporate financing of research programs grow?

6. Quality Assurance
- How can national authorities exercise quality control over foreign institutions established in their countries? How will rulings by the World Trade Organization (WTO) and decisions under the General Agreement on Trade in Services (GATS) affect national governments' ability to regulate these HEIs?

- What evaluation methodology, accreditation mechanisms and methods are appropriate for online and distance education programs?
- Should governments have different policies for not-for-profit and for-profit private institutions?
- How can students access current information on the quality of online institutions and programs?
- How are credit transfer arrangements between campus-based and virtual universities and among virtual tertiary institutions to be organized and regulated?
- How should the competencies and qualifications of students taking a multi-institutional academic path be assessed?
- How is the demand for rapid program and course development to be reconciled with the need for careful quality review?

7. Intellectual property
- How should intellectual property rights and academic freedom of professors to be reconciled with the rights and interests of their home institutions? Are professors limiting the development of knowledge and undermining their own academic freedom in their search for protection of intellectual property rights?

The present chapter will focus only on one of the challenges we have listed above and that is «governance» or, as we have titled the chapter, «governance shifts in higher education». Nonetheless it is important to be aware of the entire spectrum of challenges that HEIs are currently facing.

Tertiary education landscape has, in fact, seen the appearance of a variety of new institutions alongside the traditional universities such as virtual universities, franchise universities and corporate universities. They have created a «borderless» tertiary education market.

The phenomenon is now much more evident in the U.S.A. and developing countries with free market economies than continental Europe, but it seems a matter of time when European HEIs will have to deal with the problem because of rulings by the World Trade Organization (WTO) and decisions under the General Agreement on Trade in Services (GATS).

From a technical point of view it's possible for foreign institutions and providers to compete with local universities and reach students anywhere and in any country. The phenomenon is already well rooted in the U.S.A. (Olsen 2000) but is actually spreading in many countries: the *Virtual University of Monterrey*, Mexico, offers 15 master's degree programs using teleconferencing and the internet to reach 50,000 students in 1,450 learning centres throughout Mexico and 116 other centres all over Latin America; *Tun Abdul Razak University* in Malaysia is already operating in neighbouring countries; the *African Virtual University* and the *Francophone Virtual University* are pioneering virtual education in Sub-Saharan Africa; there

are fifteen virtual universities in Korea, offering 66 B.A. programs that reach 14,550 students (World Bank 2002).

In recent years, especially in South and Southeast Asia and the formerly socialist countries of Eastern Europe, there has been a proliferation of overseas «validated courses» offered by *franchise institutions* operating on behalf of British, U.S.A. and Australian Universities. Bennel and Pearce (Bennel and Pearce 1998) estimate that one-fifth of the 80,000 foreign students enrolled in Australian universities are studying at offshore campuses, mainly in Malaysia and Singapore, and the cost of attending these franchise institutions is usually one-fourth to one-third what it would cost to enrol in the mother institution.

The World Bank (2002) estimate that worldwide there are now about 1,600 *corporate universities*, up to 400 only 10 years ago. Some of them operate through their own network of physical campuses (such as Disney, Toyota and Motorola, this last one managing training sites in 21 countries); or as virtual universities (examples are IBM and Dow Chemical); or, the most important of all, through alliances with existing tertiary education institutions (examples are Bell Atlantic, United Health Care and United Technologies) and because of these alliances in a borderless higher education environment, a few of them have been officially accredited and enjoy the authority to grant formal degrees.

The emergence of a borderless tertiary education sector, operating on a worldwide scale, present an unprecedented challenge for quality-assurance mechanisms and it may be dangerous to rely entirely on market forces.

New «clients», such as individuals wishing to change professions, returning graduates who want to update their skills and retired people pursuing personal growth interests, are knocking at HEIs' doors asking for their aims being satisfied.

The increased competition among HEIs, for financing and students, has made students more important actors: not just learners but clients and consumers. As a consequence HEIs need to change their management practices to interact properly with students and to satisfy their demands.

As regards organizational structure, HEIs need to articulate traditional disciplines differently to respond to the emergence of new scientific and technological fields. They need to take into account the shift toward a problem-based mode of production of knowledge, away from the discipline-led approach, and the blurring of the distinction between basic and applied research: «even Ph.D. programs are increasingly affected by this change, as students become less involved in the production of new knowledge and more involved in contributing to the circulation of knowledge across traditional disciplinary boundaries»[2].

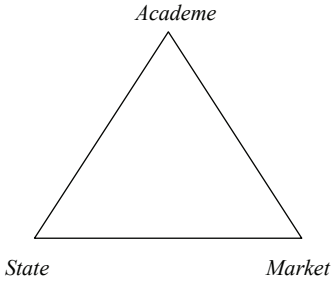
[2] World Bank (2002), *Constructing knowledge societies: new challenges for tertiary education*, World Bank, Washington D.C., p. 37.

The increased flexibility in academic careers, new pedagogical methods induced by new technologies and the considerable investment in equipment required by these new technologies are just a few additional factors in a very fast changing environment. In this environment the traditional hegemony of classical universities, as the main source of higher education, is far from granted unless they decide to act and consider the new challenges as opportunities. As well expressed by the World Bank «institutional differentiation is bound to accelerate, resulting in greater variety of organisational configurations and patterns, including the emergence of a myriad of alliances, linkages, and partnerships, within tertiary institutions, across institutions, and even extending beyond the tertiary education sector»[3]. An affective and new «governance» is needed by universities to react affectively in these changing environment.

2. Alternative theoretical models of governance

HEIs' governance is and has always been tightly linked to the alternative models of governmental steering in higher education and for that reason it doesn't make sense to analyse single institution governance without taking into account steering models and policy instruments operating in the higher education system as a whole.

The most popular and successful conceptual framework developed is Burton Clark's famous «triangle of coordination» (Clark 1983). The triangle depicts the state authority, the market, and the academic oligarchy, as the three forces that determine, through their interaction, the way in which a higher education system is coordinated.



The framework is also employed to depict developments in national steering systems, such as move from state control to state supervising and vice versa.

[3] World Bank (2002), p. 41.

According to Clark, advanced industrial countries have developed different forms of «coordination» which are located between the free axes: a more market like co-ordination (such as the U.S.A. and nowadays lots of developing countries and Eastern European ones), a more state-induced coordination (such as Sweden) and a form of co-ordination which is based above all on the rule of the academic oligarchy (such as Italy).

Clark doesn't provide any clear criteria of classifying the countries in question and of locating them inside the triangle and his model is often criticized for being too simplistic and *naïf*. Nonetheless, it is a fact that Clark's triangle has been adopted much more frequently and successfully, to study and compare higher education systems, than its more sophisticated developments. So that it may be possible to argue that being simplistic or *naïf* is its main asset.

In fact, Van Vught (Van Vught 1989) even tried to reduce Clark's three dimensional space of governance to a two dimensional one, differentiating between a *state control model* and *state supervising model*.

According to Van Vught's view, the *state control model* is the typical one of the European continental tradition, in which the state intervenes to «regulate the access conditions, the curriculum, the degree requirements, the examination systems, the appointment and remuneration of academic staff etc.»[4]; while the academic community retains a considerable authority in the regulation of internal university affairs, especially concerning the content of education and research. In the *state control model* the authority is shared among scientists and state bureaucrats/politicians, while administrative personnel and internal management are very weak and subordinated.

The *state supervising model* depicted by Van Vught is the one typical of the Anglo-Saxon tradition, in which the weakest authority is the one retained by state bureaucrats and politicians. In this model most of the power is shared between a strong academic community and internal management. The state influence remains remote and «steering at a distance»: «the state sees it only as its task to supervise the higher education system, in terms of assuring academic quality and maintaining a certain level of accountability. Government does not intrude into the higher education system by means of detailed regulation and strict control»[5].

The distinction developed by Van Vught has the limit of reducing the governance issue to a power game among bureaucrats, academic management and academic oligarchy as well as to two general philosophies of government intervention (interventionist in the state control model, «steering at a distance» in the state supervising model). However, it has the merit of introducing something more in respect to Clark's triangle

[4] Van Yught F.A. (1989), *Governmental strategies and innovation in higher education*, Jessica Kingsley Publishers, London, p. 331.
[5] Van Yught F.A. (1989), p. 333.

and that is the dimension of organisation and intermediary organisational actors.

Building on Van Vught's distinction, Berdahl (Berdahl 1990) developed a distinction between the «academic freedom» of the individual scientist at the university and the «organisational autonomy» of universities. He defines academic freedom as «that freedom of the individual scholar in his/her teaching and research to pursue truth wherever it seems to lead without fear of punishment or termination of employment for having offended some political, religious or social orthodoxy»[6]; and he distinguishes between two dimensions of «organisational autonomy», a *substantive autonomy* (universities' authority to decide *what* to do in order to fulfil their objectives and missions) and a *procedural autonomy* (the question of *how* to do it).

Dietmar Braun and Francois-Xavier Merrien (1999) included a third dimension of «belief system of governments concerning universities» («cultural institutions» as opposed to «service institutions») to Berdhal's model and ended up with a three dimensional cube of governance, integrating Clark's triangle with the organisational dimension. The cube's three dimensions are:

a) substantial control: tight or loose;
b) procedural control: tight or loose;
c) belief system: cultural or service;

Combination of dimensions, according to the tight and loose distinction, allows Braun and Merrien to identify six different models of governance and to locate them on the quadrangle. To compare effectively the new conceptual framework with the most famous one developed by Clark in 1983, Braun and Merrien, in 1999, fix the comparison among countries in 1983. Let's see the six different governance models applying them to the national higher education system in 1983.

1. Loose substantial and procedural control with a cultural belief system: the «collegium» governance model.
   The «collegium» governance model was the typical one of United Kingdom in 1983: very low government intervention in universities' internal affairs and a belief system very focused on the cultural role of HEIs. It is also the model typical of many ancient medieval universities: the early universities of Paris and Bologna, in fact, gradually emerged in the decentralised and fragmentary society of the Middle Ages and, opposite to contemporary oriental schools that were dependent or controlled by the ruling elite, they were a free community of masters an

[6] Berdahl R. (1990), *Academic freedom, autonomy and accountability in British universities*, «Studies in Higher education», n. 15/2, p. 172.

scholars, with statues, seals, administrative personnel, financial autonomy and they fixed curriculum and degree procedures (Cobban 1975).

2. Loose substantial control and tight procedural control with a cultural belief system: the «bureaucratic-oligarchic» governance model.
   The «bureaucratic-oligarchic» governance model was the typical one of Italy or West Germany in 1983: very tight procedural control from the national government (for instance regarding curricula and procedures to employ and remunerate academic personnel, etc.) and very loose substantial control (for instance about the right to decide on goals and programmes), with a belief system focused on the cultural role of HEIs and not actually interested in the HEIs' service function.
   As well depicted by the World Bank (2002), «the ownership of tertiary institutions has often shifted away from those who should be the main clients (student, employers, and society at large) to control by the teaching staff. The *raison d'être* for some institutions has become to provide staff employment and benefits rather than to serve as educational establishments focused primarily on the needs of the students and the labour market»[7], so that the bureaucratic-oligarchic governance model could be considered a deviation of purpose and «almost be described as a form o privatisation of public institutions to the benefit of specific internal stakeholder groups»[8].
   This governance model can, however, allow a second more virtuous and rare configuration, that is when loose substantial control and tight procedural control are associated with a service belief system. According to Braun and Merrien this could be the French case in 1983. This configuration of the «bureaucratic-oligarchic» governance model is rare because academics, which keep most of the power in it, tend to emphasize the cultural function of universities.

3. Loose substantial and procedural control with a service belief system: the «market» governance model.
   This governance model allows us to draw a distinction in the Anglo-Saxon world between the U.K. medieval tradition and the utilitarian orientation being fostered more clearly in the United States. In the «market governance model» we have a very low government intervention in university internal affairs, both susbstantial and procedural, with a belief system focused on the service role of HEIs.
   This model is the most fast spreading around the world, especially in developing countries, Eastern Europe, Central Asia and South East Asia.

[7] World Bank (2002), p. 62.
[8] *Ibidem.*

In Sub-Saharan African countries the number of private sector institutions grew from an estimated 30 in 1990 to 85 in 1999 (World Bank 2002: 69): Kenya (21 institutions), Tanzania (14), Ghana (12), Uganda (11), Sudan (8), Democratic Republic of Congo (6), Mozambique (5).
There were no private tertiary institutions in Eastern Europe and Central Asia at the beginning of 1990s, but today close to 350 private institutions operate there. The average proportion of students in private HEIs in Czech Republic, Hungary, Poland and Romania is 22 per cent, similar to that in the United States. In Romania 54 private HEIs, 15 of which are about to receive full accreditation, compete with 57 public institutions. In Armenia the private sector has reached 36 per cent of total enrolment. There are more than 100 HEIs in Kyrgyz Republic and Ukraine and over 300 in Russia and in «Kazakhstan, where, only two years after private higher education was legalised, 65 private institutions were in operation, Kazakhstan's president has recently announced a plan to privatise the entire tertiary education sector over the next five years»[9].
In the Philippines and Korea the private sector represents 80 and 75 per cent of total enrolment, respectively. In India and Indonesia more than half of all students attend private institutions. In Latin American and Caribbean «enrolment in private institutions represents more than 40 per cent of the total student population, the next highest proportion in the world after East Asia»[10].
Even if privatisation is not a necessary condition and not even sufficient to identify a «market governance model», nonetheless the growth of private HEIs is the most evident sign of the spreading around the world of this specific governance model.

4. Loose procedural control and tight substantial control with a service belief system: the «new managerialism» governance model.
The «new managerialism» is the mix of procedural freedom and of a government intervention which adheres to a more utilitarian stance with the willingness to direct more actively educational and research affairs in universities: «it is well known for example that countries like the United Kingdom and New Zeland have been among the forerunners to have used the new managerialism model and that they have implemented the model as a radical modernisation device for state action […] as part of a general strategy to abolish a state-oriented model and introduce a supervisory state by radical reforms taken at the top level of government, thus by the central state»[11].

[9] World Bank (2002), p. 70.
[10] World Bank (2002), p. 71.
[11] Braun D. and Merrien F. (1999), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London, p. 24.

This model requires a considerable change of attitude at the «corporate level» for many public HEIs, as they need to consider themselves as service institutions more than as cultural ones and have to employ considerable procedural freedom to reach the objectives induced or promoted by the central government. Considering the fact that «academic authority is extreme in its complexity, diffusion, bottom-up nature and decision-making by accretion»[12] the new managerialism governance model can be very difficult to apply in public HEIs with a long tradition.

5. Tight substantial and procedural control with a cultural belief system: the «bureaucratic-etatist» governance model.
   In this model the government accepts the cultural value of universities but keeps an eye on how universities are dealing with financial and organisational matters; it interferes in some way with educational and research affairs, without, however, demanding a clear devotion of universities to concrete social, economic and political aims.
   This governance model is however rare because a government, keeping a tight substantial and procedural control upon universities, tends to favour a service belief system and to use universities for its own social, economic and political purposes. For not doing so, such a government should be authoritarian and very interfering on one side and respectful of HEIs' cultural mission on the other.

6. Tight substantial and procedural control with a service belief system: the «corporatist-statist» governance model.
   This governance model is the most obvious consequence of the previous one: a government keeping a tight substantial and procedural control upon HEIs uses them for its own social, economic and political purposes. This model is the most typical one under dictatorships and North Korea is a paradigmatic example.

3. Governance shifts in higher education: an overview

The «new managerialism governance model» seems to be the most promising in Western Europe and may be in the entire Europe, after Eastern Europe's early infatuation for the «market governance model» is disappeared.

This model cannot be studied only at HEIs' «corporate level» of universities as it requires specific conditions and attitudes on both sides, at the «government level» and at the «corporate level». The higher education sy-

[12] Clark B.R. (1983), *The higher education system: academic organisation in cross national perspective*, University of California Press, Berkeley, p. 20.

stem is, in fact, not just a cluster of HEIs, like a cluster of firms, but a complex and integrated system of government, HEIs and public agencies.

The new managerialism governance model needs an evolved society and an effective government, it demands a high level of responsibility and accountability from the different actors, so that it may prove very difficult to employ this model in developing countries where the government is not able to gain a «substantial control» on HEIs without a «procedural control». As a consequence the «market governance model», with loose substantial and procedural control from the government, is spreading easily and fast in developing countries but its future results are highly debatable.

The reason why there is an increasing attention for the new managerialism governance model in Western Europe relies on the fact that governments, given the increased and recognised importance of knowledge for economic growth and national development, consider important to keep a substantial control on higher education and «steer» it for social and economic benefits. But they realized that a «procedural control» on the entire higher education system is inefficient and ineffective and, given the present booming of tertiary education, may be financial unsustainable.

After World War II, higher education in Western Europe was affected by an intensification of government regulation, as most European governments believed that an increasingly heterogeneous and complex higher education system could be steered most effectively through an extensive set of laws and regulations.

That belief proved wrong because of high drop-out rates, the long average time it took students to graduate, the long time needed by HEIs to change and adapt to the changing environment (because of extensive regulations but also because of the anti-entrepreneurial, formalistic and passive attitude produced by «procedural control»), inefficiently run institutions, ideological refusal of university-industry relationships, financial unsustainability produced by mass higher education, and sometimes low perceived quality of staff and graduates. It became clear that higher education was unable «to meet the pace of changes as defined from outside that institution and […] to respond with a speed which the policy agenda, set by governments, requires»[13]. «Governments demanded that their higher education systems react quickly to developments in society but the very nature of the established relationship between government and higher education made it practically impossible for higher education institutions to fulfil this requirement in a satisfactory way»[14].

Because of the depicted situation, the problem of the effectiveness of government steering in higher education became a major issue and in re-

[13] Neave G. and van Vught F.A. (1991), *Prometheus bound; the changing relationship between government and higher education in Western Europe*, Pergamon Press, Oxford, p. x.
[14] Maassen P. (1998) *Governmental steering and the academic culture*, CHEPS, p. 8.

cent years, in Western Europe, a number of articles and books have been published on governmental «steering» strategies for higher education[15].

The new managerialism governance model requires a strengthened intermediate administrative level to manage the gained operational freedom and *procedural autonomy* (the question of *how* to do things) and to satisfy substantial aims fixed by the government. These positions may be held by academics in the short run, especially in those HEIs coming from a bureaucratic-oligarchic model, because the tradition of academic self-rule is accompanied by a strong self-esteem of the academic community as being ultimately responsible for academic affairs; and the strengthening of intermediate administrative levels weaken the influence of academic interests. But in the long run, because of the increasing procedural complexity and administrative duties, the lack of recruiting of non academics professionals from outside can be obtained only to the detriment of efficiency/efficacy and academic quality.

It may be possible to argue that the shifts in the distribution of authority in Western Europe have produced a reducing of authority at the national level and at the faculty level and an increasing at the institutional or administrative level. In many countries, in fact, executive boards have gained more authority to the detriment of democratic councils and academic senates, which have become advisory bodies.

Government's steering of HEIs in order to keep a substantial control on higher education has gradually shifted from *ex ante* planning to *ex post* evaluation (Neave 1988), so that evaluation has become a major policy tool. The European country with the oldest tradition of evaluation for HEIs is the United Kingdom but the phenomenon has spread everywhere and the search for new evaluation indexes, both qualitative and quantitative, is a very fast growing field of study.

The success of what Guy Neave provocatively defines the «Evaluative State» (Neave 1988) derives from the fact that the government is able to maintain an overall strategic and substantial control upon a continuously enlarging and changing higher education sector, through fewer, but more precise, policy levers and indexes. This control would be very inefficient and ineffective and may be financially unsustainable through *ex ante* planning or procedural control.

In European HEIs the combination of collegial and political model of decision-making is replaced to a large extent by so-called «entrepreneurial management» (Neave and van Vught 1991), whose main characteristics are, as we had the opportunity to see for the case of the University of Twente: 1) more influence of external constituencies on central level institutional decision-making; 2) more emphasis on developing and implementing insti-

[15] See Maassen P. (1998).

tutional strategies; 3) more interest in management techniques developed and applied in the corporate world.

The overall process still going on in the governance balance between government and HEIs has been well summarised by Goedegebuure, *et al.* in 1994: «it does appear that the dual process of relaxing government control, and strengthening institutional management and autonomy, will continue in several countries. This process […] will be accompanied by enhanced institutional competition, a degree of privatisation in funding of both teaching and research, and some degree of reliance on market-like regulation. At the same time, institutions will be held more accountable for their quality and services»[16].

4. Governance shifts in higher education at the «corporate level»

To analyse governance shifts at HEIs' micro level or «corporate level» we need to introduce in more details the concept of «stakeholders».

Using concepts like «corporate level» and «stakeholders» doesn't mean we think a university can be run just like a business but we cannot avoid confronting ourselves with the most popular concepts and conceptual frameworks in the current international literature. Indeed we agree with Karmel (Karmel 1991) that a university cannot be run like a business enterprise with a chief executive in command, seeking to maximise relatively simple variables, as consultative processes are essential and, while leadership is of great importance, such a leadership must be consensual. Notwithstanding this, the modern university is usually a large complex organisation. As such it needs to be *managed*. Thus «tension between collegial and managerial style is bound to be chronic»[17].

The term «stakeholder» has received many definitions and classifications in the management literature and we could well adopt the general definition from Freeman (1984), as «any group of individuals who can affect or is affected by the achievements of the firm's objectives»[18]. But that is not enough, since there is something more concealed under the simplicity or banality of this definition.

As well pointed out by Guy Neave «it is a banality of the highest order to see students as *stakeholders*» as «essentially, that is what they have always been» [19]. The point is that the term «stakeholder», just like the term

[16] Goedegebuure L., Kaiser F., Maassen P., Meek L., van Vught F. and de Weert E. (eds.) (1994), *Higher education policy. An international comparative perspective*, Pergamon Press, Oxford,
[17] Karmel P. (1991), *Higher education – tensions and balance*, «Journal of Tertiary Educational Administration», 13 (1).
[18] Freeman R.E. (1984), *Management the stakeholders approach*, Pitman, Boston.
[19] Neave G. (2002), *The stakeholder perspective historically explored*, in Enders J. and Oliver F. (2002), *Higher education in a globalising world. International trends and mutual observations*, Kluwer academic publishers, p. 18.

«accountability», is one of those concepts that carries with it the Anglo-Saxon's view on HEIs and their relationship with society.

The translation of «stakeholders» in French, with «ayant droits» or «actionariat», or in Italian with «portatori di interessi» doesn't actually have the same meaning. In the Anglo-Saxon world, in fact, «stakeholding» refers to the local community and the people that own and founded the university; and we want to underline the term «own». In continental Europe «stakeholding» refer to an abstract «theory of regulated order» which distinguishes traditionally between three spheres of negotiation: 1) the State: Parliament, Ministry of Education, Ministry of Finance[20]; 2) the estates of higher learning; the academic estate; the administrative estate; the student estate; 3) external constituencies. They are collective categories and no distinction is made between different degrees of ownership and their impact *vis a vis* government, because public universities are considered as completely «owned» by the nation. So, as far as governance of higher education institutions is concerned, «individual ownership» is irrelevant in Continental Europe.

On the opposite, in the Anglo-Saxon tradition, religion (Weber), philosophy (John Locke), classical economy (Adam Smith) and politics linked the concept of «ownership» to the «single individual», allowing MacPherson to write about the «rise of possessive individualism»[21]. Higher education institutions are not an exception. So, as well described by Guy Neave (2002), in contrast to the theory of a «protected space» which the state erected around the universities serving the nation state (the so called «Humboldtian tradition»[22]), the Anglo-Saxon conceived a close and direct relationship between individual institution and local, external stakeholders interests; decisions as to the status of external and local stakeholders – whether legitimate or not - rested firmly in the hands of the individual establishment, its owners or trustees, rather than on indirect national legislation. In Britain ownership in academia was in the form of property-owning corporation, like in Oxford and Cambridge. In the United States it was in the form of trustees or regents who represented the local external community.

The British and American models are very different for the place that internal and external stakeholders have in each of them. In the British mo-

[20] For this see Neave G., De Groof J. and Svec J. (1998), *Governance and democracy in higher education*, vol 2, in the Council of Europe series legislating for higher education in Europe, Dordrecht, Kluwer (NL).

[21] Macpherson C.B. (1962), *The political theory of possessive individualism*, Clarendon Press, Oxford.

[22] See for the Humboldtian tradition Neave G. (1988), *On being economical with university autonomy: being an account of the retrospective joys of a written constitution*, in Tight M. (1988) (ed.), *Academic freedom and responsibility*, Guildford and Milton Keynes, Open University Press; or Berchem T. (1985), *University autonomy: Illusion or reality*, «Oxford Review of Education», 11(3), pp. 245-254.

del, what we called «the collegium» in a previous paragraph, the prime stakeholders are the internal ones: those largely self-governing «fellows» that gained independence from medieval guild, thanks to charitable, individual endowments and accumulated resources. In the American model, because of an historical pattern of shared governing that coalesced around the turn of the 20th century, the prime stake-holder status is conferred to an external stakeholder: the local community and its representatives in the board of regents or trustees. But something very fundamental is in common and differentiates the two Anglo-Saxon models from the Continental Europe ones: «the traditional English universities and their counterparts in the United States both subscribed to the principle of ownership of individual institutions rather than to the incorporation of universities into the nation or the national community»[23].

So, it may happen that continental European and Anglo-Saxon are using the word «stakeholders» in higher education issues, thinking they are speaking about the same thing but they are not, since they have very fundamental differences about the concepts of «community» (national in continental Europe, local in the Anglo Saxon world) and «ownership» of universities (obviously and irrelevantly national in continental Europe, of the local and funding community in the Anglo Saxon world).

It may be argued convincingly (Neave 2002) that the rise of the «stakeholders society» reflects, in effect, the rapid erosion of the unitary state as the prime force of co-ordination and authority in higher education. That process of erosion has produced, as a consequence, the defeat of the Humboldtian tradition of «protected space» and the continental European model of «national ownership». The continental European model and concept of «stakeholding» find themselves orphan since their father nation is «off-loading» universities to the regional and local communities, which involves giving them back such functions as internal budgetary allocations, grater initiatives to seek sources of revenue and to contract services to bodies other than those in the public sector, together with the right to make senior staff appointments without clearance from the national administration: «in the place of ties with the national community, the rise of the stakeholder society set particular store by ties directly negotiated with external interests, with employers, industry, service partners, sometime proximate, sometime distant»[24]. It's a full victory of the American concepts of «community» and «stakeholding» and we wouldn't commit a major mistake by declaring, provocatively, that it's the old American tradition the champion of «newly discovered» European universities as service institution for local communities.

The collapse of the «protected area» affected the «Student Estate» too. Students are no more member of a protected estate under a regulated order

[23] Neave G. (2002), p. 28.
[24] Neave G. (2002), p. 33.

or an *elite*. In the «stakeholder society» (American version) they are a subset of a broader category of economic actors higher education institutions are dealing with, and so «consumers».

The reason for the rising of the «stakeholders society» (American version) in higher education relies in the advent of mass higher education and governments' answer to it, with its economic and political implications: «possessive individualism […] stands at the ideological heart of the stakeholder society. However, whilst the original notion of possessive individualism was conceived as upholding stability in the social order by giving the individual a stake to defend, its contemporary edition reversed this purpose. Having a stake, investing in oneself and assuming the burdens and obligations this entailed, was seen by governments and their advisers as a way of forcing the pace of change»[25].

Our interest is however more focused on the consequences of the rising of the stakeholder society more than on the causes. And one of the main consequences is that higher education institutions are establishing much more thick and strong ties with local communities than in the past.

This scenario can be seen as a process of reorganisation of the joined higher education governance between HEIs and central government, in which this second one is going to be reduced from an exclusive interlocutor to no more than a *primus inter pares*; or as a more general process of decentralisation and devolution toward the regional and local governments (Neave *et al*. 2001).

What is relevant for our purposes is that because universities need local communities and have to serve local communities in order to establish a relation with them and survive, it follows that the local community (according to the belief of the stakeholder society) should have a «stake» in HEIs and universities should change their governance structure for that purpose and to interact effectively with local communities.

5. The Netherlands

Henry Etzkowitz, the father of Triple Helix Model[26], correctly said that when «an entrepreneurial academic culture exists, lack of an institutional framework may not be of great importance in encouraging technology transfer. However, when such a culture is lacking, or is only incipient, then institutional initiatives are crucial to generating technology transfer and knowledge based economic development»[27]. The first case may be true

[25] Neave G. (2002), p. 32.
[26] Etzkowitz H. and Leydesdorff L. (1997) (eds.), *Universities and the global knowledge economy: a triple helix of academic-industry-government relations*, Cassel, London.
[27] Etzkowitz H. (1999), *Academic agonistes, the triple helix of academic-industry-government rela-*

for many HEIs in the United States, the second one for most Continental European ones. Let's now see some concrete and institutional examples of governance shifts in higher education.

The Netherlands are one of the most centralized nation in the Western world and, as we had the chance to see for the case of Twente, it was affected by deep changes at HEIs' governance level, as it shifted from a so called «democratic system», which had its origins in the early 1970s, to the «new managerialism model», starting from 1997. The new managerialism model produced an emphasis on customer choice, the creation of markets or quasi-markets, a greater scope for individual and private sector provision, the growth of contractual and semi-contractual arrangements, flexibility of pay and conditions and, in general, an eruption into the academe of values and technicalities injected from the business world.

The Netherlands have 13 public universities. The oldest one is the University of Leiden (founded in 1575), the newest the University of Maastricht (founded in 1976). The governance structure that was in effect until 1997, had three main levels: 1) the central level; 2) the faculty level; 3) the base unit level.

The actors at the *central level* where the university council, the executive board, the rector magnificus and the board of deans. The *university council* was a representative body of 25 members: at least one-third academics, a maximum of one-third non-academic staff, a maximum of one-third students; all the members were elected by and from the university community. The *university council* could be integrated by the presence of lay members representing the general public, coming from outside the university community; but their number could not be superior to five. The university council, whose meetings were public, had the final say with respect to the budget, institutional plans, annual reports, general academic procedures, and university rules and regulations.

The *executive board*, whose meetings were not public, had all the powers that were not explicitly assigned to the university council, such as policy design, financial advice, building and grounds, personal matters and policy implementation. It consisted of the rector magnificus and two other components, all of them appointed by the minister of education (the university council and the board of deans had the rights to submit nominations to the minister of education).

The *board of deans* submitted nominations to the minister of education for the selection and appointment of the rector magnificus, who chaired the board of deans itself. It had just advisory powers about teaching and research.

tionships in the United States, in Braun D. and Merrien F. (1999) (eds.), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London.

The actors at the *second level* of governance within Dutch universities were the faculty board, the faculty council, the dean, the research committee and the education committee. The separation of roles between the faculty board and the faculty council were similar to that between the executive board and the university council at the central level.

The *faculty council* consisted of a maximum of 15 people: at least half of them academics and the remaining members non-academic staff and students. As its central counterpart, it could extend its membership by the appointment of five laypersons from outside the university community. The faculty council had the following duties: 1) it approved the budget; 2) it elected the *dean* (among the full time professors of the faculty), who remained in office for two or three years and chaired both the faculty council and the faculty board; 3) appointed the members of the *research committee* (with a majority of academic members) with advisory powers with respect to the design and implementation of faculty research programmes; 4) appointed the members of the *education committee* (with half of its members being students), with advisory power with respect to faculty teaching programmes and examination procedures.

The *faculty board* had all the powers at the faculty level, which were not explicitly assigned to the faculty council. It consisted of a maximum of five people and was accountable to both the executive board, which it had the right to advice, and the faculty council.

At the *third level* of governance within the old Dutch higher education system were the *disciplinary research groups*, clusters of professors and assistants (sometimes including non-academic staff and students) working in the same field and accountable to the faculty boards. Their main objective was to design and study research programmes, according to the procedural rules fixed by the faculty council and faculty board.

A *chief executive office* at the faculty level and the *secretary of the university* at the central level coordinated the numerous administrative unites, but the ultimate responsible for the management authority was the executive board at the central level.

In 1997, after two years of discussion on new models for the governance of universities, the governance structure that had been in place from 1970 to 1997, and that we have just described, came to an end and an Act on a new governance structure was published: the «Modernisering Universitaire Bestuursorganisatie» (MUB).

The MUB gives universities much more freedom to design their own structures, choosing among several available options, so that today there is not only one model of university governance in the Netherlands but many different ones. A general framework is nonetheless traceable.

At the central level we still have an *executive board* and a *university council* but even if the names are unchanged, functions and powers are very different. The *university council* doesn't approve the budget any more, whi-

ch was its most relevant power, and has only advisory and representative functions and the right to comment with respect to important issues and documents such as the strategic plan. As a point of the fact the university council, which was the heart of Dutch democratic rule in higher education, has been reduced from a decision making power to an advisory body, with two possible options for universities: 1) an «undivided or combined body», consisting of representatives of both employees (academic and non-academic) and students, 50 per cent employees, 50 per cent students for a total number of 16-24 members; 2) a «divided system of representation», with separate advisory bodies for employees (academic and non-academic) and for students, each one with a total number of 9-21; six universities have decided to install a divided university council and seven of them have opted for the single body model[28].

The *executive board*, with still three components, among which the *rector magnificus*, has significantly greater powers than its namesake in the old governance structure and moreover the ministry of education does not nominate its components any more. The supervisory board, in fact, appoints them.

The *supervisory board* is a new actor at the central level, with five components all appointed and accountable to the minister of education. The supervisory board nominates the three components of the executive board, approves the budget plan, the strategic plan and all the most important documents and decisions. It is the highest authority inside the university with a direct link and mandate from the minister of education itself.

Still at the central level, the *board for doctoral degrees* takes the place of the board of deans with more or less the same functions, such as the granting of doctoral degrees, even if it is now slightly less powerful.

Also at the faculty level, the MUB favours executive and single-headed powers in respect to collegial bodies: universities can choose between *deanship* and a *faculty board* and most of them have chosen to adopt *deanship*, with the dean appointed by the executive board at the central level, choosing also among people outside the university. In the same way as at the central level, the faculty council, in the new governance structure, has just advisory powers and can choose between an «undivided or combined body» and a «divided system of representation», with half of its components being students. The number of the faculty councils varies from three to more than 20 members.

At the *third level* of governance the MUB substituted the «disciplinary research groups» with *research directors*, creating a dramatic *vulnus* in the Humboldtian tradition of collegial decision-making in the research field

[28] De Boer H. and Huisman J. (1999), *The new public management in Dutch universities*, in Braun D. and Merrien F. (1999), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London.

among scholars, shifting the governance structure towards a management oriented model. However, since universities have some degrees of freedom in designing their own structures, they can keep some form of disciplinary research groups but these groups do not have formal powers any more.

The governance shift we have just described, from the 1970-1997 model to the one established by the MUB Act in 1997, can well be identified as a shift towards what we called the «new managerialism model». The Dutch government kept, in fact, a firm «substantial control» on universities (for example through those functions attributed to the newly established *supervisory board*) and relaxed «procedural control», leaving it into the hands of a much stronger internal management; the «service belief system» being already well rooted in Dutch universities.

De Boer from CHEPS (De Boer, Denters and Goedgebuuve 1998) argues that there is no evidence that the MUB Act produced a dramatic change and suggests that day-to-day practice of university governance under the old Act – more democratic and collegial – was gradually changed to a system of executive leadership. In his view the new Act did not produce any striking discontinuity with the past but just codified existing practice. De Boer's research may help to cast new light on the following question: national reforms on governance structure produce changes inside universities or if it is the other way round, with national government ratifying what is already happening inside university? However, in our view the most relevant point that De Boer's research suggests is that the causes that are behind changes in the governance structure are so strong that they can produce these changes despite of the existing legal frameworks, and can sometimes even produce themselves national reforms to take them into account on a legal basis.

As far as the «service belief system» is concerned it may well be considered as a product of that «mass higher education» that has been a reality for a long time in the Netherlands. As suggested by Scott (1996), in fact, modern systems of higher education, which are also inescapably mass systems, can no longer be regarded as instruments for producing, and reproducing, human capital, whether in the form of high-level skills (graduates) or codified knowledge (research and scholarship); they must also be regarded as arenas for the consumption of much desired cultural goods and services: «in other words, marketing life-styles is as important as promoting life-chances in the mission of mass university»[29]. This sign of times was made explicit in the UK in 1995, when Britain's Technology Foresight exercise designed a new industrial sector, called *leisure and learning*, accounting

[29] Scott P. (1996), *University governance and management. An analysis of the system and institutional level changes in Western Europe* in Maassen P. and Van Vught F. (1996) (eds.), *Inside academia. New challenges for the academic profession*, CHEPS, Utrecht (NL), p. 117.

for approximately thirteen per cent of the gross national product[30]: «mass higher education systems […] are components of a much larger continua, as the popular label *the learning society* suggests. As such they are vital economic sectors in their own right – not simply (or mainly) as producers of cultural capital or human resources; not as key assets, and multiplier, for local, regional and national economies; but as an arena on which sought-after life chances are offered»[31]. Again consumption is central.

According to Maassen and Gornitzka (2000), it is from the early 1990s that a change of language has been identifiable in governmental Dutch documents, with students becoming «consumers» and «clients», higher education institutions operating in research and teaching «markets», knowledge becoming the «product» of higher education institutions, university administrators becoming «managers». However, even if many values and beliefs of the «market model» have been introduced in the Dutch higher education system, government still keeps a strong hold and «substantial control» over the model, allowing Peter Maassen (2000) to detect even traces of a «corporate-pluralist model» in the Higher Education and Research Plan 1999: «in the period before issuing the document, the Minister had numerous contacts with the main stakeholders in higher education for exchanging ideas and consultation, to try to reach consensus over objectives, and to negotiate about suitable instruments»[32].

Scott (1996) suggests, correctly, that the rise of managerialism at the university level is not only in order to compensate for a loss of steering capacity at the system level, that is rapidly retreating from any form of procedural control. It is a way to fill the vacuum produced by the decay of a common academic culture and to cope with the centrifugal forces created by the growth of multiple missions. Universities have, in fact, become very complex and heterogeneous organisations with many and sometimes contradictory objectives. More open form of teaching such as continuing professional development and more heterogeneous forms of research such as technology transfer are now accepted as legitimate university activities alongside more conventional undergraduate and postgraduate programmes and traditional scholarship and research. The point is that new activities cannot be informally «managed» by an autonomist academic community «because they are cognitively novel and do not match the expert territories of the various academic «tribes»; […] because they are inherently reflexive and demand ceaseless negotiation with external customers; […] because they are often hybrid activities, volatilely mixing acade-

[30] Office of Science and Technology (1995), *Technology foresight: progress through partnership 14 (leisure and learning)*, London, Her Majesty's Stationery Office.
[31] Scott P. (1996), p. 118.
[32] Gornitzka A. and Maassen P. (2000), *Hybrid steering approaches with respect to European Higher Education*, «Higher Education Policy» 13, p. 280.

mic and administrative components»[33]. And, as we had the opportunity to see in the case of the University of Twente, the issue touches also traditional academic activities, because the changing concept of knowledge (Gibbons *et al.* 2001) brings under the same roof academic production of knowledge and its immediate application and commercialisation.

The overall effect, however, has been a shift of the centre of gravity of governance and management in higher education from the system level to the «corporate» level.

6. Continental Europe

In an early comparative study between Germany and the Netherlands, before the MUB Act in 1997, Maassen (Maassen and Van Vught 1994) distinguishes two models of governmental policy-making with respect to higher education – the *state control model* and the *state supervising model* – and takes the two countries as two paradigmatic examples for each model, respectively. He formulates two hypotheses: 1) the more a governmental steering model has the characteristics of the state supervising model (and the less it has the characteristic of the state control model), the higher the level of innovativeness of the higher education institutions that are confronted with that steering model; 2) the more a governmental steering model has the characteristics of the state supervising model (and the less it has the characteristic of the state control model), the higher the level of flexibility of the higher education institutions that are confronted with that steering model. Assumed Germany as a living example of *state control model* and the Netherlands as living example of *state supervising model*, operationalized the concepts of «innovativeness» and «flexibility» as «HEIs' capacity to design and implement new curricula» and as «HEIs' ability to find other financial means in a situation of decreasing state funding», respectively, Maassen and Van Vught (1994) found that both the hypothesis are verified.

Germany is, in fact, the homeland of the Humboldtian university idea of «solitude and freedom», and its governance system of higher education could be classified as what we called the «bureaucratic-oligarchic» governance model, with lose substantial control and tight procedural control from the government, inside a «cultural belief system». Accordingly, the German university system is characterised by a combination of strong control from the state, on the one hand, and a simultaneous respect of the freedom of teaching and research which is even constitutionally granted: «in legal terms, this amounts to a dual nature of universities as institutions of public law as well as autonomous corporations»[34].

[33] Scott P. (1996), p. 126.
[34] Schimank U., Kehm B. and Enders J. (1999), *Institutional mechanisms of problem processing of the German university system – status quo and new developments*, in Braun D. and Merrien F.

If we accept the conceptual framework developed by Gornitzka and Maassen (2000) we could say that in Germany there is a «corporate-pluralist steering model», in which the role of higher education reflects the constellation of interests voiced by different organized interest groups in the sector, such as student unions, staff unions, professional associations, industry or regional authorities and even the Ministry of education itself, reduced to just one of the many stakeholders. In such a system the main arena of policy making are neither the national or regional parliaments nor the university councils, but corporate networks of public boards, councils and commissions, and decision-making is segmented and dominated by clusters of interest groups (government being one of them). Under such a system, government's ability to steer the system depends upon power relationships, and structured negotiations interfere with market forces and hierarchical decisions: «the autonomy of universities and colleges is negotiated and the result of a distribution of interests and power. Change of higher education depends on changes in power, interest and alliances»[35].

In a highly provocative and frequently cited expression, Dieter Simon, *ex* president of the Wissenschaftsrat (German Science Council), described the state of German universities as «Im Kern verrottet» («rotten to the core»)[36]. And this often-cited dictum has become almost a «slogan» to describe the harsh criticism that HEIs are receiving in Germany.

Both criticism and high expectations about universities and their role in a «knowledge society» have produced a growing public interest in higher education reforms and there are few doubts among scholars about who is to blame and where changes must occur in the system: «with their constitutionally granted academic *freedom of teaching and research* professors are similar to small businessmen with a number of subordinates. But as civil servants, professors also enjoy the respective rights, especially the right that they cannot be dismissed. Thus to put it in a nutshell, professors are small businessmen who cannot go bankrupt – which is an important restriction to all kind of competitive pressure […]. It is no wonder, then, that academic self-regulation among professors shows a marked tendency to preserve the organisational *status quo*»[37]. In fact, German higher education has been unable to put into effect a deep reform, neither at the system level nor at the corporate level.

(1999), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London, p. 179.

[35] Gornitzka A. and Maassen P. (2000), *Hybrid steering approaches with respect to European Higher Education*, «Higher Education Policy» 13, p. 271.

[36] In Stucke A. (1999), *Higher education policy in German is there any strategy?*, in Braun D. and Merrien F. (1999), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London, p. 165.

[37] Schimank U., Kehm B. and Enders J. (1999), pp. 185-186.

At the corporate level there have been some attempts to emancipate universities from oligarchic academic self-regulation, especially through «professionalisation» of university leadership (a shy way to introduce some early form of «managerialism»). For example, in some states the periods of office of rectors and deans were prolonged, and new tasks were added to their responsibilities. But without giving them more powers and without new careers paths within and among universities, these innovations revealed half-hearted and doomed to fail.

Another institutional change, which has been debated, is the institution of «university boards» (*Hochschulrate*), that could be competent for the overall supervising and evaluation of a university performance and a number of rights of approval, such as establishment or removal of particular professorships, recruitment of professors, university statue, establishments or closure of departments and so on. Debate has also been about having, as members of the «university boards» (Stucke 1999), personalities from industries, politic and other social sectors, so to strength the «service belief system» and facilitate a more «social» production of knowledge. The resistance of the *status quo* have prevented these ideas from becoming a diffuse and effective practice.

At the system level the competition for financial resources (politically allocated) and best students is very low among universities, so that «positional competition» is actually inactive.

In 1996 Geuters and Maassen conducted a comparative and empirical analysis about «institutional» governance through four countries (Geuters and Maassen 1996), Germany, Netherlands, Sweden, England. They measured the time spent by academics on governance issues in each country:

Table 1. Involvement of academics in administrative activities in their own institution

hours per week spent in adminis.	Germany	Netherlands	Sweden	England
0	16.4 %	25.4 %	8.4 %	4.5 %
$0 < x < 1$	0.7 %	0.0 %	1.3 %	0.0 %
$1 \leq x \leq 8$	57.9 %	54.9 %	61.7 %	57.8 %
$8 < x \leq 20$	21.0 %	18.0 %	22.2 %	31.4 %
$x > 20$	4.0 %	1.7 %	5.4 %	6.5 %
number of valid respondents	2575	1424	1026	1853
percent. of missing respondents	8.1%	18.9 %	8.6 %	4.8 %

Looking at the data carefully it is possible to say that the time spent by academic staff of universities and colleges on administration differs considerable from country to country: it is the highest in England, followed by Sweden and Germany respectively, with the lowest participation in the Netherlands; while in England only 4.5% of the academics is not involved in administration at all, this figure is over 25% in the Netherlands; only in

Sweden and Germany a small group of academics participates in administration just a little (less than 1 hour a week); in England almost twice as many academics as in the Netherlands are involved in administration more than 8 hours per week (38% versus 20%).

With respect to a number of decisions on administrative matters the respondents were asked to indicate, using the same scale from 1 to 5, whether certain administrative decisions in their institution are made centralised (at the top administrators level or governing board), decentralised (faculty level) or as an equal blend. The respondents could choose on a five-point scale from (1) completely centralised to (5) completely decentralised:

Table 2. Centralised versus decentralised institutional decision-making

Key decisions	Germ.	Neth.	Swed.	Engl.	C	E	T	D
Selecting key administrators	1.83 (1812)	1.30 (1243)	2.15 (885)	1.20 (1701)	x	0	0	0
Choosing new faculty	4.17 (2347)	4.29 (1598)	3.19 (839)	3.30 (1821)	x	0	+	x
Promotion/tenure decisions	3.54 (2136)	3.79 (1535)	3.13 (901)	2.01 (1738)	x	0	+	0
Determining budget priorities	2.40 (2087)	2.79 (1383)	2.87 (927)	1.80 (1759)	x	0	+	x
Determining overall teaching load	2.56 (2128)	4.26 (1504)	3.07 (934)	3.47 (1778)	x	-	+	x
Setting admission standards for undergraduates	n.a.	n.a.	2.74 (910)	3.23 (1707)	x	0	-	x
Approving new academic programmes	3.19 (1743)	3.72 (1453)	3.03 (914)	2.41 (1732)	x	+	+	+

The figures in column 2-5 are the average scores per country as the mean opinion of respondents in each country (the figures in brackets refers to the number of valid answers). In columns 6-9 they have indicated the effects that each of the four relevant independent variables, for instance C («country»), E («employment status»: with tenure or without), T («type of institution»: university or other HEI) and D («discipline») has on the dependent variable, for example the perceptions of academic respondents about where specific decisions are made: for variable «C» and «D» a «x» indicates that the independent variable has a significant effect on the 1% reliability level and a «0» indicates no significant effect; for variable «E» and «T» a «+» indicates that the independent variable («tenure» or «university») has a positive effect (a higher score) on the dependent variable and a «-» a negative effect (a lower score), where «tenure» and «university» are

the reference categories; «0» indicates no significant effect. What the data reveal is (at least from the point of view of respondents):

1. the degree of centralisation differs greatly between the seven decision-making areas, and each national higher education system has its own typical distribution of authority with respect to the seven key decisions, so that no clear centralisation or decentralisation pattern can be observed for each country;
2. the explanatory power of the three other independent variables besides country, however statistically significant they may be, is small compared to the explanatory power of the variable «country», as a result of cultural differences among nations.

With the same methodology Geuters and Maassen compared, across the same countries, how much academics can personally influence institutional policy-making (1 is «very influential» and 5 «not at all influential»):

Table 3. Influential of academics on institutional policy-making

Level	Germ.	Neth.	Swed.	Engl.	C	E	T	D
Department	2.90 (2608)	2.41 (1692)	2.36 (1069)	2.34 (1913)	x	-	-	x
Faculty/School	3.39 (2657)	3.49 (1658)	3.30 (1064)	3.18 (1908)	x	-	-	x
Institution	3.81 (2661)	3.85 (1630)	3.46 (1065)	3.67 (1909)	x	-	-	0

and again the independent variable «country» is statistically significant.

A number of statements, relating to the functioning of specific institutional management and decision-making process, were included in the questionnaire (from agree, «1», through neutral, «3», to disagree, «5»:

Table 4. Feelings about institutional management and decision-making processes

Statements	Germ.	Neth.	Swed.	Engl.	C	E	T	D
Top level administrators are providing competent leadership	3.75	3.70	3.13	3.49	x	0	-	x
I am kept informed about what is going on at that institution	3.96	3.28	2.68	3.30	x	0	-	x
Communication between the faculty and the administration is poor	2.49	3.26	3.09	2.63	x	0	+	x

The administration is often autocratic	2.59	3.56	2.80	2.25	x	0	+	x
Lack of faculty involvement is a real problem	2.82	3.42	3.13	2.72	x	0	+	x
Students should have a stronger voice in determining policy that affects them	2.87	3.62	3.04	2.89	x	+	+	x
The administration supports academic freedom	3.96	**	2.89	2.74	x	0	-	x

Table 5. Control in designing courses and research projects

Statements	Germ.	Neth.	Swed.	Engl.	C	E	T	D
Free to determine content of own courses	2.40 (2253)	**	2.40 (1004)	2.46 (1788)	x	-	-	x
Free to focus research on any topic	2.34 (2420)	**	1.90 (982)	1.87 (1767)	x	-	-	x

Also in this case the variable country has, for all the statements, a significant explanatory power but the answers reveal the limits of the present methodology: the English respondents tend mostly to agree with the statement «lack of faculty involvement is a real problem» when they have the highest involvement; on the other hand the Dutch tend mostly to disagree with this statement while their involvement in administrative matters in their institution is lowest; German academics feel that their institutional administration doesn't support academic freedom while they actually have the highest degree of academic freedom. So that a comparison of academics' opinions about some statements across countries proves very difficult and the use of a quantitative scale, from 1 to 5, doesn't provide by itself any more comparable information than the use of simple adjectives. Geuters and Maassen's analysis allows, however, some important conclusions about academics' opinions:

1. the national context, the national culture and the circumstances have a great impact on what academics think about institutional governance;
2. the country where an academic is working influences his or her opinions on governance issues more than the disciplinary background, the type of institution where he or she is working (college, university or other HEI), and in most cases, the employment status of an academic;
3. in all four countries, academics feel that top level administrators are not providing competent leadership;

4. despite of the long time spent on administration, in all four countries academics feel their influence on policy-making in their institution as well as their department to be marginal. All the conclusions reveal a need and a desire for a governance change at the institutional level, according to the different national circumstances.

H. de Boer, Goedegebuure L. and van Vught F. (1996) conducted a comparative analysis of institutional decision-making processes in Sweden, Denmark, Germany, France, the United Kingdom and the Netherlands. In order to obtain empirical data, a questionnaire was sent to the rector (vice-chancellor, president) of 376 HEIs. As far as participation in decision making is concerned these are the results they obtained, on a scale from (1) non-participation to (3) active participation:

Table 6. Average degree of participation per country and actor

	Sweden	Denmark	Germany	France	U.K.	Neth.
academics	2.57	2.38	2.75	2.57	2.74	2.40
central administrators	2.43	2.00	2.39	2.54	2.68	2.50
decentral administrators	1.71	1.44	1.56	1.86	2.47	2.40
central councils	1.57	2.30	2.78	2.54	2.47	1.80
decentral councils	2.17	2.50	2.41	2.00	1.93	2.18
administrative support staff	1.14	1.20	1.19	1.50	1.16	1.30

The overall picture is that academics are closely involved in institutional decision making; next to the academics, central administrators, and a lesser extent central council members also appear to participate strongly in the decision-making process, while the decentral administrators have a relatively low score and the staff members are hardly involved.

Data show that Sweden, Denmark and France conform most to the overall picture with an exception each: in Sweden there is a relatively low participation of the central councils; compared to other systems in France staff participates much more to decision-making; in Denmark there is a relatively high participation of the decentral councils.

The Netherlands, the United Kingdom and Germany revealed a more differentiated picture: in the Netherlands the decentral councils are the most active actors, suggesting a more decentralized an democratic governance; in the United Kindom there is a far more active role of the central administrators respect to the decentral councils suggesting a more managerial and centralized structure; German respondents confirm the conventional perceptions on German institutions as characterised by collegiate decision-making and with a prominent position of academics.

Boer, Goedegebuure and van Vught also compared cross-national differences in participation by actors (the same actors as in the previous table) and issue (teaching, research, budget, selection of administrators, selection of professors, institution policy). The picture that emerged was «Denmark, Sweden and the Netherlands appear to feature rather decentralized institutions. Germany shows signs of domination by academics, in particular through its council structures. France seems hard to typify […] while the United Kingdom […] has a very distinctive combination of academics and central administrators as the most active players»[38]. As a further step, in addition to each actor's degree of involvement in the decision making process of each issue, they focused on the characteristics of these processes by choosing 21 variables and asked the respondents «to what degree is decision-making in your institution characterised by the following 21 features»:

Table 7. Features within decision making processes of HEIs per country (mean)

	S	DK	G	F	UK	NL	Tot
ad hoc decision making	1.64	2.79	2.28	2.56	2.32	2.40	2.33
emphasis on bargaining	2.81	3.35	3.06	2.94	2.31	2.87	2.82
sense of collective responsibility	3.38	3.44	3.86	3.58	3.67	3.17	3.64
high number of conflicts	2.76	2.76	2.84	2.52	2.27	2.55	2.57
emphasis on reaching consensus	3.62	3.42	4.19	3.77	3.54	3.40	3.76
emphasis on consultation	3.52	3.77	3.81	3.42	3.42	3.33	3.60
much cooperation between units	2.88	2.79	3.16	3.07	3.20	2.31	3.01
decentralised decision making	3.36	3.28	3.25	2.88	2.66	3.20	3.03
decisions based on expertise and knowledge	4.19	3.83	4.03	4.42	4.18	3.28	4.03
fluid participation	2.57	2.98	2.83	3.18	3.18	2.92	3.01
decision-making based on hierarchy	2.86	3.00	2.74	3.65	2.70	3.43	2.94
informal decision making	2.17	2.46	2.94	2.17	2.29	3.06	2.58
participation of diverse interest groups	3.12	3.23	3.16	2.86	2.83	3.56	3.08
intuition instead of rational knowledge	2.36	2.22	2.26	2.53	2.46	3.00	2.38
promoting particular interests	2.14	3.38	2.83	2.60	2.80	3.33	2.85

[38] De Boer H., Goedegebuure L. and van Vught F. (1996), *Governance and management of higher education institutions, a comparative analysis of institutional decision-making processes in five Western European countries*, in Maassen P. and Van Vught F. (1996) (eds.) *Inside academia, new challenges for the academic profession*, CHEPS, Utrecht, pp. 105-106.

decisions based on personal characteristics	2.54	3.25	3.18	3.52	2.88	3.03	3.05
dispersion of power throughout the HEI	3.19	2.85	3.07	2.42	2.67	3.05	2.85
rivalry within the institution	2.98	2.94	3.02	2.67	2.36	2.76	2.76
standardisation of decision-making	3.62	3.57	3.50	4.02	3.49	3.48	3.55
top down decision making	2.95	3.13	3.02	3.75	3.54	3.24	3.31
reaching importa. decisions takes a lot of time	3.71	3.75	3.63	3.60	3.28	3.68	3.54

(where 1 = feature is not found at all and 5 = feature is found very much)

The conclusion, according to the authors' analysis of differences, is that:

1. Denmark, France and Sweden correspond to a large extent to the average picture;
2. Germany appears to be characterised by more emphasis on bargaining, collective responsibility, number of conflicts, consensus, consultation, decentralisation, informality, rivalry and dispersion of power throughout the institution, and less by top down decision making and hierarchy;
3. the United Kingdom is characterised by less consultation, consensus, high number of conflicts, bargaining, decentralisation, rivalry and time-consuming decision-making;
4. the Netherlands reflects its democratic original structure, with more participation of various interest groups, the promoting of particular interests, informality in combination with hierarchy, more intuitive decision-making and less based on expertise and special knowledge, less collective responsibility and cooperation and less consensus-driven.

7. The United Kingom: concluding remarks about an entrepreneurial destiny

The U.K. is a European country on the forefront of university-industry linkages and in that sense it experienced very early new governance solutions in order to pursue that policy. If our objective is to look into the future of European governance in higher education, then the U.K. is the place to look at.

In the U.K. the main pressure for changing came in the early 1980s, from the central government and the vision of a strong-minded prime minister: «by exerting financial pressure we had increased administrati-

ve efficiency and provoked overdue rationalization. Universities were developing closer links with business and becoming more entrepreneurial. Student loans […] would make students more discriminating about the courses they choose. A shift of support from university grants to the payment of tuition fees would lead in the same direction of greater sensitivity to the market»[39]. According to Ian McNay «the populist anti-intellectual base of the Thatcher government denigrated the authority of intellectuals in a fashion somewhat akin to the bullying of clever children at school. Teachers were blamed for the failings in society. Universities were blamed by employers for the lack of graduate skills. […] the voice of the academic oligarchy in the national level has been ignored, that of academics within institutions has been muted»[40].

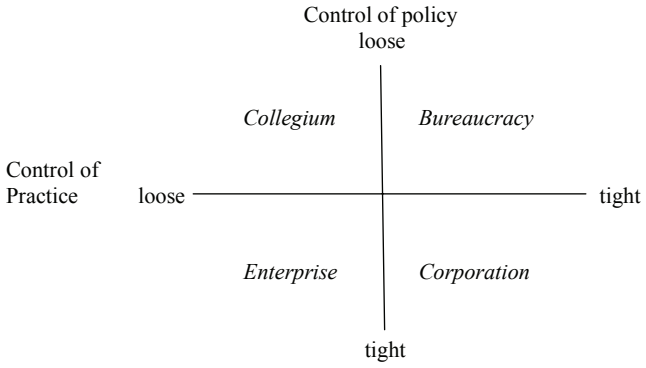
So, whatever point of view or judgment we may wish to adopt about Thatcher's policy on British higher education, it is a hugely recognized fact that it produced a major and long lasting shift in the governance structure, both at the national and institutional level.

However, the shift we defined as the «new managerialsm governance model» was not a top-down process from the government. In 1985 the rectors' conference, the Committee of Vice Chancellors and Principals (CVCP), commissioned a report on efficiency that commended a separation of leadership and management functions from the academic ones (Jarrat 1985). Starting from that, there has been a reducing of academic representation on founding councils and intermediary bodies to the advantage of lay members and representatives of the market and other stakeholders. The Higher Education Bill (1992) reduced academic and student representation and required an approach to management based on business practices, with the vice-chancellor as chief executive and the academic senate as an advisory body.

In Britain the issue of education, and higher education in particular, has been a hot one for a long time because, very early in respect to other European countries, it has been linked to the issues of industrial decline and economic growth (Wolf 2002). The 2003 Government's White Paper on «The Future of Higher Education», as it was presented in the statement to Commons, set as a first priority that universities «have to make a better progress in harnessing our knowledge to the process of creating wealth». The extension of opportunities of higher education to all, irrespective of their personal and economic background, was only the second priority of universities[41].

[39] Thatcher M. (1993), *The Downing Street years*, HarperCollins*Publishers*, London, p. 598.
[40] McNay I. (1999), *Changing cultures in UK Higher education, the State as a corporate market bureaucracy and the emergent academic enterprise*, in Braun D. and Merrien F. (1999) (eds.), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London, p. 41.
[41] It may be of some political interest to know that the order of priorities is the opposite in the published White Paper in respect to the statement to Commons.

McNay (1999), starting from Clark's work on coordination and values in HEIs (Clark 1983) and Handy's studies (Handy 1993) about industrial and commercial organisations developed a model about controls and cultures inside universities:



the model relates to Clark and Handy and in each quadrant expresses different co-ordination mechanisms, values and cultures.

Table 8

McNay	Clark 1 co-ordination	Clark 2 values	Handy Cultures
Collegium	Academic oligarchy	Liberty	Person
Bureaucracy	State bureaucratic process	Equity / social justice	Role
Corporation	State policy	Loyalty	Power
Enterprise	market	Competence	Task

McNay's «collegium» and «bureaucracy» models are the correspondents at the «corporate level» of the homonymous models at the national level we have already dealt with.

In the archetype of the «collegium» model each academic is responsible for its own teaching and research and he is completely independent from university central administration and free to interact with external agents.

In the archetype of the «bureaucracy» model communications among the different units and the external agents are inhibited because of clashes of culture and mutual suspicion: everything goes and comes from the central administration, which is the only knot in the network.

In the archetype of the «corporation» model there is a tight line of command, going from the central administration to the periphery, with the following characteristics: strong central and remote executive power, little sense of trust, no dialogue but orders from the centre, emphasis on systems and procedures rather than people, no free interaction with external agents.

Even if very often reality presents a complex mix of different stereotypes, we want to stress that the «enterprise» model tends to derive in the «knowledge society» (Rip 1998) as an avoidable evolution either of the «collegium» or of the «corporate» model (the latter often being itself an evolution of the «bureaucracy» model). The «enterprise» model seems, in fact, the only one able to give an answer to the different issues we outlined in the previous pages and the only one that enables HEIs to give a well-conducted contribution to regional and local development.

If we focus on McNay's quadrants we realise that the «enterprise» model, with its tight policy control and loose procedural control, is the correspondent at the institutional level of the «new managerialism governance model» we described in a previous paragraph about the national level. In the «enterprise» model there is an internal interdependence and accountability between central administration and peripheral units, all connected with communities and clients. Budget responsibilities are devolved to «heads of resource centres» and peripheral units are allowed to define, inside a general framework, their own objectives and methods; they are encouraged by the government policy to raise income, to create linkages and define agreements with outside companies and regional agencies, to attract students and their fees, to provide services to local communities, to make «efficiency savings». The language is student-centredness, diversity of intake, modular courses, technology transfer, continuing professional development and, sometimes, even customers, market segments, management by objectives or lump-sum budgeting. Many institutions in the U.K. and elsewhere have set up companies, joint ventures, incubators, and have used their cutting edge research to provide high priced short courses and all sorts of revenues.

Such idea of institutional governance requires a strong policy at the central level and a great flexibility and entrepreneurship at the peripheral and even individual level, inside an open and network structure. This sort of structure and governance seems to be the only one able to interact quickly and innovatively with a fast changing and demanding environment, and to create that «social knowledge» as «ability to produce an effective action in a consensual domain» we defined in a previous chapter.

An important chapter of the White Paper for the future of higher education (2003) is the one about «higher education and business – exchanging and developing knowledge and skills». Some of its main points are 1) the strengthening of the Higher Education Innovation Fund (HEIF) – worth 90 million pounds in 2005-2006 – to encourage especially the non resear-

ch-intensive universities to work with employers, locally, regionally and nationally; 2) funding through HEIF a network of 20 knowledge exchanges to reward and support HEIs working with business, transferring technologies and knowledge, and in skills development, within local communities of practice; 3) building stronger partnerships between HEIs and regional development agencies (RDAs), with RDAs playing an increasing role allocating HEIF; 4) helping sector skills councils to forge stronger alliances between business and relevant departments in universities and colleges; 5) supporting higher education institutions in their role as community leaders, celebrating the cultural and social contribution that they make.

According to the Government's White Paper, British economic competitiveness and improvements in the quality of life depend on the effectiveness of knowledge sharing between business and higher education and «institutions should increasingly be embedded in their regional economies, and closely linked with the emerging agendas of Regional Development Agencies […]. Universities and colleges are key drivers for their regions, both economically and in terms of the social and cultural contribution they make to their communities»[42].

The idea of engaging regional development agencies (RDAs) more closely in the distribution of HEIF funding is in order to make sure it is properly focused on regional development priorities. The HEIF is, in fact, a third stream of funding from the central government for higher education institutions alongside funds for teaching and research. This third stream of funding is intended to help less research-intensive universities in their activities of knowledge transfer: «we wish to see these universities concentrating on acquired technology and working mainly with local companies through consultancy rather than licensing new technology. We see staff in these institutions acquiring a group of leading edge technologies and exploiting them by creating innovative solutions to real world problems and needs, rather then themselves making breakthroughs in science or technology»[43]. To do this universities «will need to link with industry in *communities of practice* as part of their day to day teaching and research. This should provide more routes to reach small and medium-sized enterprises (SMEs) and less technologically sophisticated business»[44].

It is obvious that such a mission for HEIs cannot be fulfilled without a governance structure open to links and interactions with outside agents, and with a high degree of procedural freedom, motivation, innovativeness and initiative, at the peripheral and even individual level. In a single word

[42] White Paper (2003), *The future of higher education*, presented to Parliament by the Secretary of state for Education and skills by command of her Majesty, on January 2003, Crown copyright, p. 36.
[43] White Paper (2003), p. 38.
[44] *Ibid.*

there should be an «entrepreneurial» culture, inside an «entity» ideally borderless: the kind of knowledge such a university would produce would be unavoidable «social», according to the definition of «social knowledge» we developed in chapter two, and would not be in danger of any «positional competition trap».

In order to reach such objectives the British Government made additional funding as a new strand of HEIF available, to create a network of about 20 knowledge exchanges, which will be exemplars of good practice in interaction between less research-intensive institutions and business and which will underline the distinctive mission of these. Each knowledge exchange will receive up to £ 500,000 for each of five years. To be eligible, a knowledge exchange will have to demonstrate, among other things, a strong support from employers and good partnerships with key stakeholders, including the relevant RDA, and Sector Skills Councils, and a demonstration of how its work fits into the RDA strategy, and helps to serve the local and regional economy.

The knowledge exchanges will form part of a wider network with the New Technology Institutes that were announced in the Government's 2002 White Paper on enterprise, skills and innovation – two institutes in each region of the country based on partnerships between higher education, further education, and private sector organisations, which provide specialist ICT and other high tech learning programmes, and work closely with local companies to ensure they have the know-how to use advanced technology.

A special experience in that sense and in a very special location is the «London Higher Education Consortium» (LHEC). The central purpose of the consortium is to enhance London national and international reputation as a place for study and research, and to develop the city competitiveness and innovation. To achieve these goals, the LHEC champions collaboration between educational institutions and businesses. It provides a strategic forum for London 40 higher education institutions and 52 further education colleges. It supports academic research and contract work for business, and encourages senior business managers to serve on institutional governing bodies and to provide inputs into course design and development.

The Government's 2003 White Paper regards universities as having a critical role for the local economy and community[45] and develops a concept of knowledge very similar to the one we defined in a previous chapter as generated through a continuous interaction in a consensual domain: «the

[45] «[…] universities and colleges working to serve a region together can make a dramatic impact on their community. […] And institutions often have roles focused on particular sections of their community – for example. Music and arts colleges support the cultural life of their community; education faculties support schools; faculties of health and medicine play a key role in local health services. We want to support institutions in developing and building on their community roles, and welcome suggestions on ways in which government can support this aspect of their work better» (White Paper, 2003, p. 41).

relationship between knowledge transfer and the development of technical skills in the workforce, is one of interdependence: the development of new skills can also lead to a more intelligent demand for knowledge transfer and stimulate the further development of the knowledge pool»[46].

The White Paper opens the governance structure to employers, asking them to take part in decision making about courses: «we will ensure that the Sector Skills Development Agency and sector skills councils are able to work directly with the new unified teaching quality enhancement body so that higher education has up to date knowledge of employer needs in each vocational area. Sector skills councils also have a key role in bringing together universities and employers, and in helping employers to act as intelligent customers of universities so that courses that have the needs of employers at heart are developed and successfully marketed»[47].

The idea of higher education institutions as providers of «vocational» education, doesn't mean low-tech or low quality education. It is only the realisation that, in a mass higher education system, in which students go to university basically to find a better job, doesn't make sense for HEIs to behave like in the last century élite system, when each student was taught like if he was running for the Nobel Price. The mass higher education system, by necessity, requires universities to take into account their new «customer» needs and aspirations: «sector skills councils will also engage employers with institutions on curriculum development, placements for students in industry, and exchange of staff. […] It will be important for universities to adopt a more strategic approach to the design and assessment of courses, and also of work experience placements, which will become ever more important as vocational provision expands»[48].

In one case (that is the new two-year foundation degrees, which are developing as employer-focused education qualifications) employers are even asked to play a central role in designing courses, so both they and the students can be certain that they will be gaining skills that are really needed in work[49]. These courses may also have the advantage of creating a substantial link between vocational and tertiary education, making this second one more attractive for young students than vocational education usually is[50]. In a fast changing work environment, in fact, developing skills and attributes appreciated by the market is, in fact, important also for those who study traditional academic disciplines: «we will continue to sponsor

[46] White Paper (2003), p. 41.
[47] White Paper (2003), p. 42.
[48] *Ibid.*
[49] A succesfull example of «two-year foundation degree» is the «aircraft engineering foundation» between KLM and Kingston University Consortium.
[50] See for a deep and complete analysis Alison Wolf (2003), *Does education matter? Myths about education and economic growth*, Penguin Books, London, ch. III «A great idea for other people's children: decline and fall of vocational education».

work already under way to integrate the skills and attributes which employers need, such as communication, enterprise and working with others, into higher education courses, on a subject by subject basis»[51].

In the U.K. universities are free and autonomous institutions, with the power to determine their academic and operational future; leading, managing and appointing their own staff; determining their estates strategies; and managing their resources as they see fit. They may charge overseas students, part-time students, and post graduate students market rates for fees. The British Government believes, nonetheless, that HEIs do not always use the freedom they have to the full and, as well as giving the sector new freedoms, it wants to empower them to use the freedom they already have to their fullest potential, so that they can be dynamic and self-determining institutions. It is obvious that such an increased freedom and self-determination, in multi-million euro organisations with highly complex and often contradictory objectives, poses exceptional management challenges and, given the return to the economy and society that HEIs provide, the British Government and other public institutions have proposed the creation of a Leadership Foundation. It will identify and meet key leadership and management needs across the sector, and it will be charged with developing models of good practice in leadership and management. But its main objectives in the Government view would be to take forward key recommendations on how leadership and management can best support links between higher education and business.

The state of these links is strong and growing, as is testified by the measure of business start-ups and other spin out activities. During 2001, British universities created 175 new spin-out companies (it averaged 70 a year in the five years to 1999-2000)[52]. They include innovative companies like the Leeds spin-out Ecertec, which aims to develop smart materials that will allow, for example, «warpable» wings to change shape on aircraft. The increase in the number of patents filed by HEIs has been up to 22 per cent between 1998-99 and 1999-2000 and «the proportion of higher education research income funded by companies in the UK is also up and is now at a higher level than even in the U.S.A.»[53].

Some serious dangers, however, lay ahead.

Universities' «entrepreneurial future» may provide some advantages, which include:

1. *Clients*, like in industries and in any other business sectors, gain prominence, whoever they are (students, employers, service demanding insti-

[51] White Paper (2003), p. 44.
[52] Charles D. (2002), *Higher education-business interaction survey*, Centre for urban and regional development studies (CURDS), New Castle upon Tyne.
[53] White Paper (2003), p. 12.

tutions, local businesses and communities) and particularly as more of them pay for their service directly (and in that sense doesn't make any difference if they use public funded *vouchers* or their own money) and gain maturity in their learning role;
2. *Local community and economy* links are very much enhanced and university production of knowledge must by necessity be of a «social nature», being it developed through a continuous interaction with local actors in an almost «boundless field», with great benefit for the employment of the higher educated;
3. *Change* and positive attitude toward change and innovation is stimulated throughout HEIs;
4. *Complacency* among academics and HEIs' administrators is challenged and in many circumstances it is absolutely necessary;
5. *Costs* of a massive higher education system are linked to local and regional economic growth as well as individual salary opportunities in a sustainable economic framework.

Universities' «entrepreneurial future», however, may also produce some potential dangers:

1. *Curriculum distortion*, as business and local community's funds tend to privilege some subjects and disregard completely some disciplinary fields, even inside the most privileged areas;
2. *Distorted internal allocation of resources*, as it may be based on commercial considerations and privilege research or graduate and post-graduate (or even part-time, for companies' employees) teaching to the detriment of undergraduate teaching (which generates lower incomes);
3. *Compromise on standards* because of great pressure by «paying customers», HEI's performance indicators, commercial and not commercial pressure (publications to be reached and performance indicators to be satisfied) on HEIs' researchers;
4. *Legitimacy threat*, as «entrepreneurial universities» may become undistinguishable from «entrepreneurial business» and could so loose their special status and legitimacy, that they still really have in civil society;
5. *Free circulation* of knowledge may be greatly affected, because of patents and commercial agreements (also with students paying high fees);
6. *Market demand driven* research, courses and services can lead to decision-making being abdicated to clients and to «mission drift» so that «leaders and managers in universities need to find a fine balance between their institution inherited identity, its *finalité*, its abiding values and the turbulent, demanding political and social environment»[54].

[54] McNay I. (1999), p. 57.

As well pointed out by Patricia J. Gumport (2000) from Stanford University, higher education institutions are increasingly using market discourse and managerial approaches to restructure in an attempt to gain legitimacy; yet, in so doing, they may change their basic nature to such a degree that they move away from their historical character, functions, and accumulated heritage as higher education institutions and so they may end up loosing legitimacy, paradoxically. And legitimacy is universities' biggest asset.

Even if many experiences, like the ones we analysed in Cardiff and Twente, suggest at the moment that transformation is possible without any loss of legitimacy, what is going to happen in the long run is still to be seen and «little else can be said with any certainty about such a complex phenomenon as the coordination of higher education, except to insist upon the rejection of a linear model of change and historical transformation when assessing the relationship between higher education and the state»[55]. What is important to consider is that the «status quo» and the long lasting «Humboltian tradition» of «solitude and freedom» are not an option any more and a brave shift in governance structure and management practice is needed, because the environment has changed to an unprecedented degree and HEIs' role and nature are at stake has never before: «some rectors try to run universities with little change […]. Others have gone for full-blooded entrepreneurial approaches […]. Many drift, despite themselves, to a culture of control and bullying reflecting their own lack of confidence. There is a need for better management. How it should be different is still being debated. The search for a "fit" to changing circumstances has led to structural ephemerality within many institutions. With diversity, no single universal model may be appropriate. There is, though, a need for improvement before the emerging culture of cynism, verging on contempt becomes dominant and destructive»[56].

[55] Meek V.L. (2002), *Changin patterns in modes of coordination of higher education*, in Enders J. and Fulton O. (2002) (eds.), *Higher education in a globalising world*, Kluwer Academic Publishers (NL) , p. 69.
[56] McNay I. (1999), p. 58.

Conclusion

1. Higher education and local economic development: key findings

Our research was of a practical nature and was intended to be just a first step, and indeed an exploratory step, towards a very ambitious and long run objective, that is to design higher education policies and regional development policies to favour valuable interactions and linkages between HEIs and the local systems and regions in which they are both embedded, with specific reference to the Italian case, with its peculiar industrial districts and cities.

In order to make a step forward towards that objective we looked for *best practice* around Europe, which, for their conditions and characteristics, could be able to provide some lessons or ideas for the Italian case.

We understood that it does not make sense to speak about higher education without investigating the nature of the «knowledge» and «goods» that the «higher education industry» provides to local systems. So, in chapter II we developed a conceptual framework that identifies two scenarios and two different kinds of knowledge. In the first scenario we have an active system of positional competition in which the higher education industry provides positional goods (scarce by definition, such as both *élite* universities and diplomas). Students compete to obtain such goods as they provide a positional rent. In the second scenario the positional competition is not active, because of egalitarian policies by the national government, which do not allow a market for positional goods in education, or because of structural incoherence in the positional competition system[1], such as when the national higher education policy is providing the same positional good to everyone.

[1] As we argued was the case for the Italian system.

As far as the kind of knowledge provided by the higher education system is concerned, we defined a «traditional or individualistic knowledge» and a «social knowledge». According to the traditional or individualistic view, knowledge can be accumulated by each single student while at university and then sold on the market after graduation; interactions with other students, local economy or society don't play a major role and may be even discouraged as they detract time and resources from the individualistic accumulation of knowledge. This traditional concept of knowledge is very popular when the positional competition is active and strong, as it can be instrumental to positional competition and a very suitable tool to regulate the «positional struggle» among students.

The concept of knowledge we defined as «social», starting from new epistemological premises, assumes that knowledge cannot be accumulated (information can) and cannot be possessed or generated by single individuals. According to this view knowledge does not exist by itself but only inside a community of individuals and is continually regenerated and made existent through linguistic and non-linguistic activity, and the structural coupling generated by that activity. Breakdowns may occur at any moment at the individual as at the social level. This brings us very far from the neoclassic growth model, in which knowledge is individually and steadily accumulated, as capital is. Knowledge becomes a very fragile social product, inseparable by the evolutionary process of actions and interactions inside a «local» community of individuals.

We argued, from a theoretical point of view, that a higher education system involved in the production of «social knowledge» is, by definition, a generator of valuable interactions between higher education systems and the local and regional ones in which they are embedded.

An active system of positional competition or the production of «social knowledge» by HEIs are both effective answers to unemployment among the highly educated but only the second one is able to generate effective interactions between higher education systems and the local and regional ones in which they are embedded. Only the second solution can generate an effective contribution for «learning regions» or «high cultural local systems» (Lazzeretti 2003) and create a relationship between the university and its region and city.

Following Arie Rip (2002) we showed that under the «Strategic Science» regime[2], that is nowadays dominating the way of doing science, the distance between scientific research and eventual applications disappears and scientists have internalised the social pressure for relevance of research: the new scientific establishment promises to contribute to wealth creation and sustainability (and working toward it) and forges new alliances with poli-

[2] A «regime» is a more or less stabilized set of rules about how to proceed, in doing science as well as in organizing it and legitimating it.

cy makers and social actors on this basis. Under this regime not every research programme ends in an actual prototype or commercial product, of course, but horizontal mobility of scientists and lateral combinations benefit industrial innovation. Such a regime cannot work under the traditional concept of knowledge and may be considered as a result of the theoretical concept of «social knowledge» we developed in chapter two.

In chapter three (University of Twente) and four (University Cardiff) we analysed the relations between two higher education institutions and their respective local and regional systems. As we already said, we chose them because they are successful cases in peripheral regions, which went through a time of industrial decline and used the university as a regional booster for economic development. As such they could be potentially instructive for the Italian traditional industrial districts and local systems.

Both cases showed that the local university was involved in the production of what we defined as «social knowledge» and thanks to its contribution it was possible to reach: 1) both academic international excellence and local economic relevance; 2) local development from unfavourable conditions, such the ones that are inside peripheral regions experiencing an industrial decline.

In chapter five we discussed the issue of HEIs' governance and realized that a special governance structure is needed for universities to involve in the production of «social knowledge». We suggested that a «new managerialism» governance model at the national level (that is a loose procedural control and a tight substantial control with a service belief system) and an «entrepreneurial» model at the «corporate level» (that is loose control of practice and tight control of policy inside each higher education institution) may be the most suitable governance models for favouring interactions and production of «social knowledge» among HEIs, firms and even society at large.

We argued that the rising of the new governance models, both at the national and «corporate level», can also be considered as a consequence of the increasing relevance and importance paid to the Anglo-Saxon concept of «stakeholders». The translation of «stakeholders» in French, with «ayant droits» or «actionariat», or in Italian with «portatori di interessi» doesn't actually have the same meaning. In the Anglo-Saxon world, in fact, «stakeholding» refers to the local community and the people that own the university and once founded it; and we want to underline the term «own». In continental Europe «stakeholding» refers to an abstract «theory of regulated order» which distinguishes traditionally among three spheres of negotiation (Neave, De Groof and Svec 1998): 1) the State: Parliament, Ministry of Education, Ministry of Finance; 2) the estates of higher learning; the academic estate; the administrative estate; the student estate; 3) external constituencies. They are collective categories and no distinction is made among different degrees of ownership and their impact in respect

to government, because public universities are considered as completely «owned» by the nation. So, as far as governance of higher education institutions is concerned, «individual ownership» is irrelevant in Continental Europe.

On the opposite, in the Anglo-Saxon tradition, religion (Weber), philosophy (John Locke), classical economy (Adam Smith) and politics linked the concept of «ownership» to the «single individual», allowing MacPherson (1962) to write about the «rise of possessive individualism» and higher education institutions are not exceptions. So, as well described by Guy Neave (2002), in contrast to the theory of a «protected space» which the state erected around universities serving the nation state, the so called «Humboldtian tradition» (Neave 1988), the Anglo-Saxon conceived a close and direct relationship between individual institutions and local, external stakeholder interests; decisions as to the status of external and local stakeholders – whether legitimate or not – rested firmly in the hands of the individual establishment, its owners or trustees, rather than on indirect national legislation. In Britain ownership in academia was in the form of property-owning corporation, like in Oxford and Cambridge. In the United States it was in the form of trustees or regents who represented the local external community.

It emerges (Neave 2002) that the rise of the «stakeholders society» reflects, in effect, the rapid erosion of the unitary state as the prime force of co-ordination and authority in higher education. That process of erosion has produced, as a consequence, the defeat of the «Humboldtian tradition» of «protected space» and the continental European model of «national ownership». The continental European model and concept of «stakeholding» find themselves orphan since their father nation is «off-loading» universities to the regional and local communities, which involves giving them back such functions as internal budgetary allocations, grater initiatives to look for sources of revenue and to contract services to bodies other than those in the public sector, together with the right to make senior staff appointments without clearance from the national administration: «in the place of ties with the national community, the rise of the stakeholder society set particular store by ties directly negotiated with external interests, with employers, industry, service partners, sometime proximate, sometime distant» (Neave 2002: 33). It's a full victory of the American concepts of «community» and «stakeholding» and we wouldn't commit a huge mistake by declaring, provocatively, that it's the old American tradition the champion of «newly discovered» European universities as service institution for local communities. In that sense the continental European bureaucratic-oligarchic governance model could be considered a deviation of purpose and «almost be described as a form o privatisation of public institutions to the benefit of specific internal stakeholder groups» (World Bank 2002: 62), such as academic oligarchies.

We agree with Patricia J. Gumport (2000) that higher education institutions are increasingly using market discourse and managerial approaches to restructure their governance, in an attempt to gain legitimacy among «stakeholders» and local communities; but in so doing, they may change their basic nature to such a degree that they move away from their historical character, functions, and accumulated heritage as higher education institutions and so they may end up loosing legitimacy, paradoxically. And legitimacy is university biggest asset. Even though lots of experiences such as the University of Carfiff and the University of Twente, suggest at the moment that transformation is possible without any loss of legitimacy, what is going to happen in the long run is still to be seen. What we conclude is that the «status quo» and the long lasting «Humboltian tradition» of «solitude and freedom» are not options any more. In order to make higher education sustainable and valuable for regional and local development, a brave shift in governance structure and management practice is needed, towards the «new managerialism governance model» at the national level and the «entrepreneurial model» at the «corporate level».

2. Limits of the present work and future possible research paths

Even if research visits on the field, both at the University of Cardiff and at the University of Twente, were fundamental for interviews, data gathering and ideas, and this research would not actually exist without them, the present work is mainly a meta-analysis upon the already collected data and didn't involve itself in a significant collection of unpublished and first hand data. The two case studies we presented, about Cardiff and Twente, are not enough to draw any general conclusion, but as we already made clear in the introduction this was not our purpose. In fact, this is an exploratory study and indeed just a first step towards a very ambitious and long run objective, that is to design higher education policies and regional development policies to favour valuable interactions and linkages between HEIs and the local systems and regions in which they are embedded, with specific reference to the Italian case, with its peculiar industrial districts and cities.

What the two case studies provided us with, is a test for the general conceptual framework we developed in chapter two and valuable best practice which, because of the regional characteristics (essentially peripherality and industrial decline in traditional industries), are quite instructive for similar cases in Central Italy and prove that higher education may sometimes reverse declining economies under unfavourable conditions.

The conceptual framework we developed in chapter two was useful for analysing and putting on the forefront of analysis the basics and fundamentals of higher education: both its «bright side» (providing «knowledge», «social» or «individualistic or traditional» according to our definition) and its

«dark side» (screening device for the selection of *a priori* best talented people or way of conquering legal granted or not legal granted «positional rents»).

We discussed higher education policy and regional development policy issues and their implications on governance with special reference to European best practice but no attempt was done for the practical implementation of our results in the Italian case.

The present work was focused, in fact, on foreign best practice and tackled the Italian case only from a theoretical point of view.

A future possible research path could certainly be the application of the conceptual framework we developed in chapter two on typical Italian industrial districts and as far as the kind of knowledge produced is concerned, we believe the results would be in most cases discouraging.

Our exploratory study produced as a result the hypothesis that the governance structure of the higher education systems and that of each university is the main responsible for the poor quality of university-industry linkages and the kind of knowledge HEIs produce. Such hypothesis should be carefully verified in the Italian industrial districts, where SMEs' dimension and ownership are often considered to pay a significant role.

Even if our work suggest, through the concept of «social knowledge» and governance, a theoretically coherent solution to make higher education valuable for regional and local development, the actual applicability and practical effectiveness of such a solution for the Italian case is all to be explored.

The concept of «social knowledge» we developed on chapter two (and compared with traditional knowledge) may be an easy concept to develop from an abstract point of view but its actual applicability requires a complex set of institutional and legal reforms that should consider an evolution path that starts from the existent situation. Indeed, under the Italian «bureaucratic-oligarchic» governance model, both at the national and «corporate level» (loose substantial control and tight procedural control with a cultural belief system), its applicability may prove impossible and the new governance models we suggest, at the national level («new managerialism») and the «corporate level» («entrepreneurial»), in order to overcome the present situation, may prove difficult to apply upon the existing system: the main question still open for future research is if the present Italian public system of higher education, with its enormous stiffness, has the ability and will to reform itself or if new higher education institutions will come up in order to satisfy the demand of higher education as it is happening everywhere outside Europe and even in Eastern Europe (World Bank 2002), under a pure market governance model. It is possible to formulate, as a research hypothesis for future investigations, that something between is probably the case in Italy[3].

[3] The new «Italian institute of technology» the Italian Government has recently announced it wants to put in place in Genova could be interpreted as a sign and will towards the creation

It is a fact, however, that the Italian legislator after more than a century of remarkable continuity and *status quo*, started unexpectedly, in 1989, with Law 168, an age of reforms that may be considered «the first step in an attempt to build a policy strategy based on the principles of the 'State-supervisory model of governance' which has been described by van Vught and Neave»[4], but after many years and laws «the real working of the governance system has hardly changed at all: the new rules have had little effect, and the oligarchies have been very able in using them in a self-referential way. The framework has been modified, but the actors are always the same, behaving much as they have always done»[5].

We argue, conclusively, that developing institutional and cultural devices for an effective governance shift from the «bureaucratic-oligarchic» governance model to the «new managerialism» and «entrepreneurial» models (at the national and institutional level, respectively) may be the most urgent need for the Italian policy maker, both for regional and higher education policy.

of new institutions as opposed to the possibility of reforming and enlarging existing institutions.

[4] Capano G. (1999), *Italy: the endless transition*, in Braun D. and F. Merrien (1999) (eds.), *Towards a new model of governance for universities? A comparative view*, Jessica Kingsley Publishers, London, p. 198.

[5] Capano G. (1999), p. 219.

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