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Introduction

Structures of higher education systems, or more precisely the shape and the size of the national higher education systems, have been among the issues of higher education policy in the economically advanced countries of the world for more than four decades (OECD, 1973; Papadopoulus, 1994; UNESCO, 1995). They are obviously at the crossroads of external expectations and internal dynamics of higher education, and are shaped by legitimate influences and interests of society at large, governments in their steering and supervisory roles, institutions of higher education and their staff, as well as the learners. In addition, they are of interest to all actors and observers, because they note a long-term trend of expansion of higher education accompanied by a continuous debate about its desirability, and a perennial instability or dynamic of the structures – whereby extent of homogeneity or diversity is constantly on the move through overall structure changes, as well as through the re-positioning of the individual institutions on the overall 'map' of higher education.

Over the years, however, the emphasis placed on the shape and size of the higher education system varied substantially. Moreover, we observe considerable changes of views and controversies concerning the most desirable quantitative and structural developments. Finally, perceptions underwent continuous revisions as regards the driving forces affecting the patterns of the higher education systems (see the analyses in De Moor, 1979; Geiger, 1992; Kyvik, 2004; Meek et al., 1996; OECD, 1974; Teichler, 1988*a*, 1988*b*).

The aim of this contribution, following a brief overview of the key elements of shape and size, is to sketch the major developmental trends. Second, an overview is provided of key concepts explaining the structural dynamics. Third, special attention will be paid to the main external and internal factors that are viewed as crucial for the structural dynamics. This final theme is addressed because most recent debates suggest that the key factors affecting the structural developments tend to become increasingly complex.

Borderlines, quantities, structural dimensions

The higher education system

Higher education' and 'higher education system' became popular terms in the second half of the twentieth century (cf. Teichler, 2001). The spread of this term had three serious implications.

First, the use of these terms suggests that there is a macro-structure of higher education. Higher education activities and institutions in a country have something in common and are interrelated. We do not consider individual institutions or sub-units as self-sustaining entities, but rather as embedded in common frameworks of societal expectations, regulatory frameworks, and co-operative or competitive linkages. In some countries, this move towards a perception of a system became clearly visible when laws and governmental orders addressing individual institutions of higher education were substituted by a system-wide regulatory framework.

Second, the terms suggest that the characteristic features of universities are not necessarily indicative anymore for the higher education system as a whole. Those institutions are termed universities, as a rule, which serve a twofold function: teaching and research – the latter being the creation and preservation of systematic knowledge. It is widely assumed that universities in today's meaning of institutions fostering 'analytic', 'rational', 'systematic', 'critical', 'sceptical' and 'innovative' thinking through teaching and research emerged from the European universities of the Middle Ages. In the second half of the twentieth century, the view spread that higher education learning is no longer solely the domain of this institutional type – at most supplementing a few institutions specialized on specific disciplines and professions that are not fully on equal terms with universities. Rather, 'higher education' institutions might vary between a close link between research and teaching on the one hand and a sole teaching function, at the cognitive level they strive for, and in the weight of academic and applied thrusts.

Third, the term 'higher' suggests a specific quality, e.g. a certain degree of cognitive rigour, an expectation that students learn to question prevailing rules and tools and understand theories, methods and substance of 'academic' knowledge. During the final decades of the twentieth century, terms such as 'post-secondary', 'tertiary' and 'third-level' gained popularity (OECD, 1998). They underscore a common biographic stage of learning: after ten to fourteen years of schooling, upon completion of primary and secondary education, students might enrol in a third stage of education, as a rule prior to embarking on regular employment. The term 'tertiary education' suggests that learning at this stage has so much in common across institutions, as far as external expectations and internal dynamics are concerned, that the structural borderlines between 'higher' and other 'tertiary' education get blurred and lose relevance.

In some countries, terms of this kind got momentum. Among international organizations, the OECD became an ardent advocate in the 1980s for substituting the term 'higher education' by 'tertiary education' in the international higher education policy arena. However, the delineation between a cognitive more rigorous 'higher education' and anything

beyond secondary education did not cease to exist. It appears in distinctions between ‘tertiary type B’ and ‘tertiary type A’ in OECD documents, ‘degree-level programmes’ and ‘sub-degree level programmes and certificates’, ‘associate degrees’ versus ‘degrees’, or plainly in the continuous frequent use of the term ‘higher education’.

Finally, it might be added that the borderlines of a higher education system are blurred by two additional factors. Though higher education teaching and learning is provided predominantly by institutions specialized on teaching and possibly research, other institutions primarily serving other functions, e.g. private production and service companies, chambers of commerce, might offer higher education programmes within their institutional setting. Last, but not least, research is often undertaken by academies, by research institutes as independent units, segments of research associations or state institutes, and by private production and service companies, who might offer some teaching functions and possibly degree-granting functions independently, or in association with institutions of higher education.

Quantitative development

The quantitative development of higher education, i.e. the size of the higher education system, often played a stronger role in higher education policy debates than the structures of the system, i.e. the shape. ‘Expansion’ of higher education, though possibly interrupted by relatively short periods of stagnation (or less frequently contraction), has been a pervasive trend in most countries, whereby attention was most frequently paid to enrolment rates and less often to absolute numbers of institutions, students and staff or research activities. Specifically, enrolment rates are often defined as the rate of new entrant students or first-year students among the respective age cohorts, or as the number of students among all persons in a typical college-going age. Last, but not least, graduation rates were calculated in order to measure the results of higher educational expansion with respect to the educational level of those embarking on careers, and to the educational attainment, notably of young adults.

The most popular terms in characterizing the higher education expansion trends are those coined by the American higher education researcher Martin Trow (1970, 1974, 2000): ‘elite’, ‘mass’ and ‘universal’ higher education. The preoccupation with the quantitative development in the public debate is indicated by the dominant perception of Trow’s arguments. As a rule, ‘elite higher education’ is understood as the totality of higher education when up to 15 per cent enrol; ‘mass’ higher education as totality when up to 50 per cent enrol; and ‘universal’ higher education when the majority enrol. In contrast, Trow himself had combined the quantitative with a structural argument: ‘mass higher education’ developed different characteristics alongside the persisting ‘elite education’ in order to protect the ‘elite sector’ from the pressures and consequences of ‘mass higher education’.

Available statistics suggest that around 1950, on average only about 5 per cent of the respective age group of the economically advanced countries enrolled in higher education programmes. OECD statistics suggest that this rate clearly surpassed 40 per cent in the year 2000, and the average was calculated to have surpassed 50 per cent when a wider definition of ‘tertiary education’ was employed (OECD, 2002). Though the rate varied by country at about 1 : 3 (for example, about 3–10 per cent around 1950; about 10–30 per cent in the late 1960s; and about 25–70 per cent around 2000), debates about the potentials and risks of higher

education were surprisingly similar in most economically advanced countries at any one time (see the sequence of analyses in OECD, 1973, 1983, 1991, 1998).

Structural dimensions

National systems of higher education vary substantially according to the extent of diversity and according to the role dimension of diversity play. For example, we note that mono-disciplinary universities are frequent in some countries, while multi-disciplinary universities dominate in other countries. In some countries, a substantial proportion of basic research activities are allocated in research institutes outside higher education, and in some countries in separate research institutes within universities. In other countries, an institutional link between basic research and teaching is customary. In some countries, we note relatively clear boundaries between institutions of higher education in charge of both teaching and research, and institutions focusing on teaching. Some universities publicly announce a specific character in their name, such as 'International University', 'Catholic University', 'General Electric University' or 'University of the Air'. Others are viewed as breeding places of schools of thought ('Chicago School', 'Frankfurt School'). Finally, names of individual universities, such as Harvard and Stanford, Oxford and Cambridge, Sorbonne, or Tokyo and Kyoto, are often put forward as symbols of excellence and reputation.

A closer look reveals that the public debates about desirable patterns of the higher education system emphasized some dimensions of possible diversity while attention was hardly paid to other dimensions. We might argue that the research function of higher education often plays a role as indicating high reputation sectors of higher education, but is hardly addressed in further specifications where the teaching function plays a central role. There were some debates about the virtue of mono-disciplinary versus multi-disciplinary institutions and about 'small' versus 'large' universities; but these distinctions usually are not viewed as crucial for characterizing the structure of higher education systems.

Over recent decades, substantial attention was paid to a select number of formal dimensions of diversity: (a) types of institutions and programmes (e.g. universities versus *Fachhochschulen*); and (b) levels of programmes and degrees (e.g. Bachelor, Master and doctoral programmes). Moreover, debates on diversity address informal dimensions, i.e. dimensions not visible in legal documents and official system descriptions, whereby we disentangle: (a) vertical attributes of informal diversity, such as 'quality', 'excellence', 'elite', or 'reputation'; and (b) horizontal attributes, such as 'profile' of a higher education institution. Most debates on formal and informal diversity refer explicitly to institutions of higher education as key carriers of homogeneity and diversity. When informal attributes are taken into consideration, a close examination reveals that they are more frequently attributed to sub-units of institutions, i.e. departments, study programmes or disciplines.

Structural configurations and their dynamics in the latter half of the twentieth century

Key controversies

In the late 1950s and early 1960s, when the view spread in economically advanced countries that an expansion of higher education would be essential for economic growth, the conviction that an increasing diversity within higher education was desirable gained momentum. Two arguments were most powerful as far as advocacy for increasing diversity is concerned. First, most experts agreed that a stronger concentration of resources for research is more appropriate than for teaching. Therefore, an expansion of higher education institutions coupled with rising student numbers was expected to be accompanied by a growing differentiation of the research role of the increasing number of higher education institutions. Second, a growth of diversity of talents and motives of job expectations among the rising number of students was considered a matter of procedure, irrespective of how static or dynamic the prevailing concepts about academic potentials of students were actually harboured.

The views about the desirable diversity, however, differed substantially in various respects: (a) what range of heterogeneity or homogeneity was preferable; (b) to what extent diversity should be arranged inter-institutionally or intra-institutionally; (c) how clearly differences should be demarcated or soft and blurred; (d) to what extent diversity was best served by formal elements of diversifications (i.e. different types and levels), or by informal elements (i.e. differences in the reputation or profile between individual institutions or their sub-units); and (e) whether diversity prevails predominantly according to the vertical dimensions, i.e. ranking according to quality, reputation etc., or whether horizontal differentiation, e.g. according curricular thrusts and institutional profiles, plays a role as well.

Over the years, the debates changed substantially. This first reflected that changing major policy concerns, which moved from education and economic growth around 1960 to equality of opportunity, employment opportunities for graduates to finally diversity of options in the 1980s, were likely to reinterpret diversity of higher education. Second, experiences acquired in the process of higher education expansion and structural experimentation had to lead to a search for revised solutions.

Developments in Europe

During the 1960s, the structure of higher educational systems became a major issue in higher education policies. The establishment of polytechnics in the United Kingdom, the *Institutes universitaires de technologie* in France and the *Fachhochschulen* initially supported the view that most European countries placed prime emphasis on institutional diversification, and that two-type or multi-type structures were likely to emerge in more or less all countries. However, a review undertaken by the OECD in the early 1970s already suggested the emergence of a broader range of options: ‘multipurpose’, ‘specialized’ and ‘binary’ higher education (OECD, 1973; subsequent typologies are discussed in Kyvik, 2004; Neave, 1989; Scott, 1995; Teichler, 1988). As far as types of higher education institutions are concerned, some countries continued to rely on a ‘unitary’ system: for example, Italy preserved a system

of universities as the only institutional type. In some countries, e.g. France, the level of programmes was more strongly advocated than the types of higher education institutions. In Sweden, the length of university programmes varied substantially by field of study, and both universities and other colleges were viewed as components of a 'comprehensive' pattern of the higher education system. Altogether, we note a move away from relatively extreme structural alternatives discussed and implemented in the 1960s to more moderate alternatives in the 1970s, when the range of models could be named the 'diversified model' on the one hand, and on the other hand the 'integrated' model. According to the former (which became more popular), differences in quality, status and content should be substantial; whereas according to the latter, which did not gain popularity in many countries, those differences ought to be kept in bound (Hermanns et al., 1998). However, some kind of a consensus seems to have emerged that borderlines between various sectors of the higher education system ought to be blurred, and that a certain degree of permeability of educational ladders ought to be ensured.

Starting in the late 1970s, and progressing for a while in the 1980s, debates about formal structures of the higher education system lost momentum in Europe (OECD, 1983). This coincided with policies on the part of the European Economic Community since the mid-1970s that put emphasis on mobility and co-operation while calling for respect of the varied cultural backgrounds of higher education systems in the European countries (see the overviews in Neave, 1984; European Commission, 1994). Moreover, higher education policy debates in European countries paid increasing attention to informal structural aspects, notably on vertical differences according to academic reputation and job prospects of graduates.

In the late 1980s, formal structures of higher education systems were back on the agenda. The decision by the Council of the European Community in 1988 (according to which three years of successful study is the regular entry qualification to high-level occupations) could be interpreted as a signal that types of programmes and institutions were no longer relevant for career opportunities. In addition, the move to upgrade the polytechnics to universities in the United Kingdom in 1992 (Fulton, 1996; Kogan, 1995, 1997; Scott, 1996) was interpreted by many experts as an indication of a formally unitary structure being the model of the future, while diversity was likely to persist or even grow informally among institutions of the same category, according to quality, reputation and graduate careers. In contrast, various countries established or reinforced a two-type structure, for example the Netherlands with the upgrading of *Hogescholen*, Finland (*Ammattikorkeakoulu*), Austria and Switzerland (both *Fachhochschulen*) (Kyvik, 2004).

Explaining the dynamics of change

Over the years, various concepts have been developed aiming to explain the structural dynamics (cf. the overviews on concepts in Meek et al., 1996; Neave, 1989; Teichler, 1988, 1998). Without going into detail, we can point out that four major conceptual frameworks emerged without a single one being clearly superior in explaining the actual developments comprehensively.

According to the first concept, the emergence of a second type of higher education institution, or ways of increasing diversity, was explained as a natural consequence of the

expansion of higher education (Clark, 1983; Trow, 1974). Such 'expansion and diversification' concepts suggest that the expansion of higher education leads to an increasing diversity of students as far as their motives, talents and job prospects are concerned, as well as to more diverse needs of other users. The increasingly diverse needs were most readily met through a growing 'division of labour' among institutions of higher education.

Second, concepts became popular; these might be called 'drift theories' (Neave, 1996). According to them, the different types of institutions or the individual institution were not necessarily eager to serve a variety of needs. Rather, institutions often aim to stabilize themselves and to increase their status by getting closer to the most successful ones. Often, an 'academic drift' was noted among non-university higher education institutions. Concurrently, signs of a 'vocational drift' emerged under conditions of a tight graduate labour market and general pressures for a growing practical relevance of higher education (Williams, 1985).

A third type of approach might be called a 'flexibilization' concept. In contrast to a clear segmentation according to institutional types, substantive profiles, etc., a belief spread in the virtue of late selection, permeability of educational ladders, compensatory measures and soft patterns of diversity. Accordingly, no decision in educational careers would be considered as definite, here both advocates and critics of educational expansion could agree, and rapid adaptations could be expected if major problems occurred (see the analysis of OECD policies in Teichler, 1988*a*).

Finally, we note 'cyclical' concepts of the structural development of higher education (see the discussion in Windolf, 1997). Accordingly, certain structural patterns and policies come and go in cycles. For example, opening up educational roots and reduction of the differences between varied types of higher education institutions and course programmes might be on the agenda at times when a shortage of graduates is felt; whereas segmentation and hierarchization of higher education might be favoured and actually might take place, when fears of over-supply of graduates or 'over-education' dominate the scene.

Explaining diverse policy options

Varied structural developments of national higher education systems could not come as a surprise because higher education policies were not led by common assumptions. Certainly, higher education policy debates often seemed to be searches for the functionally best possible option, whereby international comparison was a popular tool.

In a study published in the late 1980s, however, I came to the conclusion that these 'functional approaches' did not clearly dominate. In addition, varied 'political approaches' came into play. Actors varied according to the extent they harboured 'elitist', 'meritocratic', 'egalitarian', 'traditional' or other values. Finally, 'idiosyncratic approaches' never lost momentum (Teichler, 1988*a*). Strengths and weaknesses of various structural models tend to be interpreted with a favourable eye to the national tradition of higher education systems and of the historically routed links between higher education and society.

Recent developments

From national to supra-national policies

Until the early 1990s, structural higher education policies and trends were clearly national policies and developments (Gellert, 1993). International comparison was a powerful tool for understanding national developments and for setting a framework in the search for improvement; however, different decisions were made within individual countries reflecting international views of the best options, varied policy preferences, as well as national contexts. The Sorbonne Declaration of 1998 and the Bologna Declaration of 1999 were visible starting points for supra-national action to make the patterns of the national higher education systems more similar across Europe.

The Bologna Declaration seems to be based on the convictions that: (a) higher education systems in Europe will move quickly towards quite similar patterns; (b) levels of higher education programmes will be the clearly dominating structural characteristic of higher education as compared to types of higher education institutions and programmes, ranks and profiles, etc.; and (c) structures of the higher education systems have an enormous impact on all key features of higher education.

Half way between the start of this policy and its declared target of implementation, i.e. the European Higher Education Area to be realized in 2010, it is not easy to predict the extent to which these convictions will eventually be confirmed or challenged. We note that the Bologna Process has triggered off enormous activities for higher education reforms, and substantial efforts are undertaken for structural reforms in terms of a convergent model (the changes are documented in Haug et al., 1999; Haug and Tauch, 2001; Reichert and Tauch, 2003; UNESCO, 2003). However, we also note that: (a) the ideal of a quite similar structure seems to be watered down in the process of implementation; (b) structural dimensions other than levels of programmes and degrees do not lose as much importance as one might have suggested (for example, implementation of the Bologna Process has specific routes in countries with several types of higher education institutions; for other reasons, increasing attention is paid to ranking and profiles of individual higher education institutions or their sub-units), and (c) the reform 'list' of the Bologna Process broadens continuously – possibly one does not trust anymore the direct impact of the structures as such, but wants to implement convergent structures within a broad range of diverse higher education reforms (Kehm et al., 2005; Teichler, 2005).

The results of the Bologna Process cannot be predicted because many factors come into play; these were not so clearly visible at the beginning and cannot be viewed as consistently supporting common European policies in keeping with the Bologna Declaration.

The growing complexity of underlying forces

From the 1950s to the 1990s, structural developments and policies of national higher education systems in the economically advanced countries were analysed in most cases by referring to a limited set of factors: growth of student enrolment, diversity of talents and motives, the changing graduate labour market, compatibilities and tensions between the teaching and learning function and the research function of higher education, and finally

institutional policies between imitation and search for unique solutions were referred to most frequently.

Certainly, the following factors deserve special attention for explaining the current developments: (a) international co-operation and mobility; (b) globalization in terms of blurring the borders of national systems and increasing worldwide interconnectedness; (c) new media; (d) the new steering and management system in higher education; and (e) knowledge society (pressures for relevance, new patterns of competence).

In the framework of the UNESCO Forum on Higher Education, Research and Knowledge, experts from Europe and North America analysed recent structural developments on higher education, thereby paying attention to key forces reflected in structural policies and actual structural developments (Bleiklie, 2004; Guri-Rosenblit and Sebkova, 2004). These analyses clearly indicate a growing complexity of the major underlying forces. The role of these five forces noted above will be outlined briefly.

International co-operation and mobility

A structural convergence of national higher education systems is advocated in the Bologna Declaration of 1999, primarily for the two purposes of: (a) enhancing the attractiveness of higher education in (continental) European countries for students from other parts of the world through the introduction of a stage system of programmes and degree; and of (b) facilitating the mobility of students within Europe.

The former aim calls for improved transparency, but is neutral as far as the extent of diversity within the national higher education system is concerned. The latter aim, however, implies that quality differences between higher education institutions are kept within bounds (Bleiklie, 2001; Neave, 2002; Van der Wende, 2001). Mobility within Europe can be facilitated through convergent structures only if trust is justified that the quality of teaching and learning is similar at a stage system of study programmes throughout Europe. This indicates that opportunities for the recognition of study abroad are no longer determined by the overall composition of national trends and policies. Rather, national policies are, to a certain extent, shaped by common policies of various countries to stimulate student mobility by facilitating recognition of study abroad.

Globalization

In recent years, the term ‘globalization’ surpassed the term ‘internationalization’ in the frequency employed in economically advanced countries to characterize cross-national changes of both contexts of higher education and higher education systems themselves. The term ‘globalization’ suggests that increasing cross-border activities in higher education indicates a ‘blurring’ of borders, while ‘internationalization’ is based on the assumption that national systems continue to play a role in the process of increasing cross-border activities. Moreover, the term ‘globalization’ is often put forward when claims are made that higher education is bound to be more strongly affected by worldwide economic developments, as well as by suggestions that the individual higher education institutions, notably those wishing

to place themselves in the first league of reputational hierarchy, have to compete globally (Teichler, 2005).

'Globalization' concepts of this type suggest that relatively steep vertical diversification of higher education is desirable without advocating certain formal dimensions of vertical diversity, and without taking a clear position on whether vertical diversity is accompanied by horizontal diversity. Often, pre-stabilized harmony between quality and relevance in the elite sector of higher education in the twenty-first century seems to be taken for granted.

New Media

New technologies obviously contribute to a closer worldwide interconnectedness of higher education; academic information is more easily and more rapidly spread across the world. In this context, it is worth noting that new technologies might have a substantial impact on the structure of the higher education system (Guri-Rosenblit and Sebkova, 2004).

Undoubtedly, reinforcements of existing reputational hierarchies are often the initial visible result of the increase in the use of new media. However, there are reasons to assume that new technologies and media do not necessarily strengthen steep vertical diversification of higher education. First, the rapid spread of information might challenge the traditional rationales of physical concentration of excellence. Elite universities and centres of excellence might be substituted by a 'network of excellence' between institutions. Second, diversity within higher education might be less steep, if all institutions have almost equal opportunity as far as access to top quality information is concerned. For example, high-quality teaching and learning might be more easily realized without being directly embedded in high-quality research.

New steering and management systems

New mechanisms of steering and management might also have a substantial impact on the structures of the higher education system (Bleiklie, 2004). Obviously, higher education in Europe is increasingly shaped by mechanisms of incentives and sanctions.

It is generally assumed that these mechanisms help to increase the efficiency of higher education. The most ardent advocates of these new mechanisms often claim that both an increasing vertical and horizontal diversification is the most likely result of growing competition for success. However, this is by no means the only possible result. For example, institutions and academics neither trusting their top position, nor resigning at the bottom might be most strongly challenged, thus leading to a smaller gap between the previous top- and the previous middle-level institutions. Competition might reinforce imitation drifts rather than stimulating diversity. A strong emphasis placed on rewards and sanctions might undermine intrinsic motivation; a strong managerial emphasis in higher education might lead to substantial tensions between management and academia; both might elicit uncontrolled changes of the higher education system as a whole. The increasing power of evaluation and accreditation mechanisms does not necessarily reinforce horizontal diversity. Our current knowledge base is shaky as far as the impact of new steering and management systems on the structure of the higher education systems are concerned.

Changing structures on the way towards a knowledge society

Most experts agree that the concept of a ‘knowledge society’ is one of the most appropriate future scenarios of society when considering the challenges of higher education and the opportunities ahead. Consensus prevails that knowledge will determine economic growth and societal well-being to an increasing extent.

A close look at public debates and expert literature suggests that a ‘knowledge society’ is no concept suitable for predicting the future structures of higher education systems. On the one hand, we observe elitist notions of ‘knowledge society’: the intellectual elite will determine the development of the knowledge society, and those who succeed in breeding and attracting the highest academic talents will be the rulers of the knowledge society. On the other hand, we note egalitarian notions of ‘knowledge society’: this will depend on large numbers of individuals with in-depth knowledge and understanding, able to take decentralized decisions (Teichler, 2003).

Growing complexity of underlying forces, decreasing predictability of results

As long as we assumed that a limited number of underlying forces determine the structural development of higher education, we were in the position to develop relatively bold concepts about the causes and the consequences of certain patterns of the higher education systems. The more we become aware of a growing complexity of underlying forces, the less we can trust in simple concepts of causes and effects. We need more in-depth analysis in order to gain evidence of the role these underlying forces actually play. The current vivid

process of higher education reforms has reinforced high hopes and substantial controversies as regards desirable and actual structural developments of higher education. We are just at the beginning of a search for evidence.

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2. Diversification of higher education systems

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Abstract
The integration of higher education systems in the Western world has led both to development of overall strategies for the organization of higher education institutions by public authorities, as well as to strategies by higher education institutions aiming to position themselves within emerging higher education systems. The article first asks whether these developments represent converging or path dependent trends before it sketches a conceptual point of departure for the analysis of the relationship between institutions in higher education systems based on the effects of integration on academic hierarchies and functional specialization. Then I discuss how recent attempts at integrating higher education systems in Europe and the US may affect the relationship between institutions in the light of conceptions of education as a process by which students learn to learn or by which they learn specific occupational skills. Thirdly, the development is situated in a wider context where the relationship between different types of institutions are considered in relation to the spread of an extended and more utility oriented concept of knowledge. Finally, I consider briefly some possible future developments based on how modern capitalist and public managerialist knowledge regimes constitute conditions for higher education integration.

Introduction[1]

As higher education systems in much of the Western world have become steadily more integrated questions relating to their organization have been brought into focus. Changing beliefs within national governments and among university leaders about how such systems ought to be organized have been an important driving force of change. One aspect of this development has been formed by the ideal of universities as market or quasi-market organizations striving to become entrepreneurial in their approach to teaching and research (Clark 1998, Etzkowitz and Leydesdorff 1997, Martin and Etzkowitz 2000, Slaughter and Leslie 1997). Another aspect is the development of national and international knowledge regimes that increasingly lay down the conditions under which universities operate (Bleiklie and Byrkjeflot 2002, Dill and Sporn 1995, Kogan et al. 2001, Levine 2000, Nowotny et al. 2001).

The development whereby higher education institutions become part of formally defined higher education systems, is one among a number of change processes that have occurred in the last decades of the last century and still goes on. Hence we may regard this as a period in which higher education systems emerge. This article primarily deals with the development of national systems. It is based on the assumption that this process of integration will increasingly be felt as a forceful influence on higher education. Whilst the process is primarily driven by actors at the national level such as political authorities or other institution owner and funders, they are affected by national and as well as supranational organizations like OECD, Unesco, WTO and international developments. The process has a global reach, along with the introduction of an American style degree system and attempts at creating stronger leadership structures and systems for institutional evaluation and accreditation in order to turn the institutions into dynamic, entrepreneurial high quality enterprises. The integration of higher education systems therefore, raises at least two important questions. First, how should the relationship between the institutions be organized? Secondly, what are the proper procedures by which the integration ought to take place? This article seeks to analyze how higher education systems have responded to these questions.

The relationship between higher education institutions – be it universities, specialized vocational schools or liberal arts colleges – may be understood in terms of different concepts of social order. One concept is *the hierarchy* in which institutions are assumed to occupy different positions in a rank order. The position of a given institution in the hierarchy is determined by its score on a specific set of characteristics by which all institutions are evaluated. Thus a formal hierarchy preupposes som kind of standardization or rationalization in the Weberian sense that a set of common, recognized criteria are established and formalized (Weber 1978). One way in which the hierarchy might be organized is according to the level of the degrees that the institutions give. In such a system institutions that offer doctoral degrees may make the top, whilst institutions that offer shorter bachelor level educations form the bottom of the hierarchy. Another concept is the *organism*, understood as a functional order. Within the organic totality, institutions have different tasks or functions

1 The article has profited considerably from comments by members of the Regional Scientific Committee for Europe and North America, UNESCO Global Forum on Higher Education, Research and Knowledge.

that cannot be measured against a common denominator, to the contrary, each function is unique and must be fulfilled in order for the whole to function adequately. Such tasks or functions may for instance be the education of people to specific occupations (engineers, doctors, nurses, teachers, etc.) that society needs.

The two concepts may thus give us some conception of the social order to which the institutions belong. Even if the two principles are different, they are not mutually exclusive. In real higher education systems, hierarchy and specialization are combined in some way or another, and actual orders may therefore be more or less hierarchical and more or less specialized.

In the literature on higher education two views are pitted against one another with regard to the development of higher education systems. One view emphasizes a number of international trends that have been observed the last decades and assumes that higher education systems will converge. International developments such as increased cross national student mobility, the commodification of teaching and research or the European 'Bolgona process'[2], will push higher education systems to become more uniform, less autonomous and more eager to please actual funders be they public authorities, private businesses or students. One should in other words, expect them to aquire a number of common characteristics that neither of them had before (Gibbons et al 1994). Against *the convergence thesis* it has been argued that shared ideologies and notions about how higher education institutions should be organized is not enough. New ideas have been spread, interpreted, developed and implemented in highly institutionalized environments in which norms, traditions and a range of peculiarties of single institutions and national systems produce *path dependencies* that sustain cross national variation by shaping the way in which national responses to international trends have been devised (Bleiklie 2001, Kogan et al. 2000, Musselin 1999). Furthermore within national systems one frequently finds contradictory policies – for instance attempts to develop and sustain both elite and mass education – that tend to make them potentially unstable. In other words, both assumptions about convergence and path dependency may seem insufficient to predict the actual future developments within higher education systems. How they develop depends on how these contradictions are balanced. Such processes may be easier to understand if we take into account the *knowledge regimes* and changes within such regimes that are likely to shape future developments.

Ulrich Teichler (1988) gave a now classic analysis of the trends in the organization of higher education systems during three decades of rapid expansion followed by a relative standstill during the 1950s to the 1970s. His analysis focused on how higher education systems evolved under conditions of rapid growth, diversification and finally stagnation. This article deals with the development from the late 1980s until the early 2000s and its main focus is on processes of national systemic integration, internationalization and changes in the relationship between higher education, state and society. I shall first sketch a conceptual point of departure for the analysis of the relationship between institutions within higher education systems so that we more easily can understand the strategies that are used by institutions and

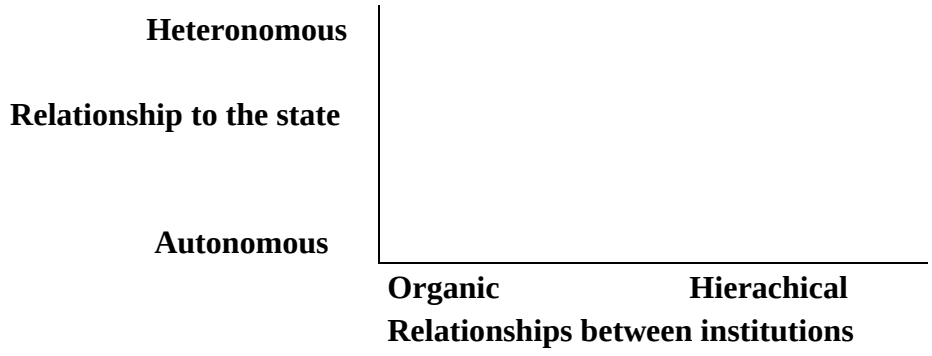
2 What is popularly known as the 'Bologna process' was initiated by 'the Bologna declaration' of 1999 in which 29 European education ministers agreed to introduce a common degree system based on a 3 year bachelor, 2 year masters and a 3 year doctoral degree.

public authorities in order to affect the relationship in the desired way. Then I shall discuss how recent attempts at integrating higher education systems may affect the relationship between the institutions along two dimensions: a) according to the degree of standardization and hierarchization, and b) according to the degree of specialization and functional division of labor. Thirdly I shall situate the development in a wider context of knowledge where the relationship between different types of institutions are considered in relation to global trends in higher education: the extension of the concept of knowledge, the developemnt of mass education and the universal proliferation of research based knowledge.[3] Finally I shall discuss the developments observed in the previous parts in the light of the concept of knowledge regimes and how such regimes constitute conditions for higher education integration.

The position of institutions in higher education systems

It is commonplace to assume that the integration of higher education systems has had very specific consequences for the position of institutions in relation to one another and in relation to the state. One important set of consequences turn on the question of institutional *autonomy*, which in this context turns on the extent to which the institutions themselves are free to make choices and formulate strategies that shape the relationship. One standard assumpton goes more or less like this. Before the integration process started institutions were relatively autonomous in relation to one another and in relation to political authorities in public system (cf. fig. 1). During the integration process a hierarchical order has started to emerge. The reason for this development is that organizational integration implies standardization, as a common set of formal rules for determining positions in a rank order in a Weberian sense, and the establishment of uniform principles for how the relationship between the institutions should be organized by means of such devices as common degree and career structures. The assumption easily follows that the hierarchical order eventually completely will replace the organic order.

Figure 1. Institutional positions in higher education systems



3 I use the term ’global’ about phenomena and processes that have a global reach in the sense that they affect countries and societies on various continents. This should not be taken to mean that ‘global’ phenomena are found everywhere (cf. Keohane and Nye 2000).

The integration process seems to imply furthermore, that public authorities through legislation and other measures increasingly interfere in order to achieve an integration by which very diverse institutions are required to adapt to and being rank ordered in a hierarchy of prestige with other institutions that they initially consider quite different from themselves.

There are two important political-economic concerns that may push such a development. The first concern is that the level of education in the population affects the comptitiveness of a nation. Prevailing beliefs seem to indicate that in order to elevate the level of education one must raise academic standards as they are laid down by the most prestigious research universities. The logical implication of this line of reasoning is that the higher the ratio of doctoral degrees in a population, the better. The second concern is that higher education systems need to be flexible in order to be efficient. In addition to offering the possibility of specialization in specific disciplines, students should have the opportunity to combine a wide array of subjects from different disciplines within – whether they do this within one institution or by moving from one institution to another – as the economic situation and employment situation changes. This will make the institutions more efficient, and the candidates they produce more well adjusted to the needs of the labor market. In order to do this there must be a common degree structure and a common system of student evaluation and grading across all types of education.

Until quite recently however, there where clear distinctions both between categories of institutions such as research universities, liberal colleges and vocational colleges and between types of institutions within the same categories, such as e.g. teacher, engineering and nursing colleges. The degree systems were incompatible and credits not transferrable. In order to address these concerns on has to develop common formal standards.

These observations may form the basis for the following general assumption: National higher education systems in the Western world have moved away from a system in which categories of institutions where differentiated only according to specialization, such as teachers' colleges, engineering colleges, nursing colleges, liberal colleges and research universities. Such systems were not integrated in political-administrative terms, but operated seperatly within an 'organic whole' consisting of mutually independent, specialized institutions with considerable freedom to develop their own specific profiles. In recent years higher education systems have become more integrated with common standards (such as degree and grading systems) by which categories of institutions are ordered hierarchically, from 2-year colleges via bachelor degree institutions to graduate degree institutions (universities). Thus *a hierarchic system* is established, a standardized rank order where all institutions are measured and positioned according to one single or a very limited set of criteria.

There are ample reasons to believe that the real picture is somewhat more complicated than the above assumption indicates (Etzkowitz and Leydesdorff 1997, Kogan et al. 2000, Musselin 1999). Firstly institutions within today's integrated higher education systems constitute a complex set, in which different categories of institutions have had varying relationships with public authorities and demonstrate considerable variation with respect to

their degree of autonomy.[4] This might for instance imply that to the extent that common norms of institutional autonomy are established within a unified system, some institutions may lose whilst others may gain autonomy compared to what they previously enjoyed. Yet another possibility is that the formal integration does not succeed in creating uniform practices. Consequently binary systems like the ones that prevailed in countries like England, Germany, Finland and Norway in the 1970s and 1980s may still be de facto operating, and former research universities may continue to enjoy more autonomy than vocational and liberal arts colleges even in those cases where the latter have formally become elevated to university status. Secondly, institutions may try to adapt to the integration process by means of different strategies. While some institutions may accept the conditions laid down by the formal hierarchy, others may seek to maintain their autonomy, cultivate their specialties and gain acceptance as representatives of some kind of specialized knowledge. Thirdly, national systems vary considerable with regard to their degree of hierarchisation both across categories of institutions and within categories. Teichler (1988: 51-75) provides examples of how countries like Australia, Britain, France, Japan and the Netherlands during the 1970s and early 1980s developed quite different structural arrangments for organizing the relationship between categories of institutions within their higher education systems. Whilst the American, English and Japanese systems have been hierarchical in the sense that there within the same category of intsitutions (e.g. research universities) are clear differences in prestige, perceived quality and selectiveness, the German and Scandinavian systems have been considered examples of non-hierarchic arrangements in which all universities (or institutions within any given category) are considered roughly equal in terms of prestige and quality. Fourthly, knowledge has gained importance in society, amongst other things because of the emergence of mass education and steadily more extensive use of research in private business as well as public administration. This contributes to rendering the interrelations between society and educational institutions more diverse and complicated. The criteria of valuation become more complex, making it difficult to classify institutions in relation to one another in terms of simple, unambigous functional or hierarchical principles (Bleiklie and Byrkjeflot 2002; Nowotny et al. 2001).

The argument that I put forward here is that even if higher education institutions are brought under one formally unitary and hierachical system, the two types of order will continue to co-exist, they will be supported and sustained by diverse forces that partly pull in the same direction and partly in opposite directions (Clark 1983). Furthermore, as I shall return to later, the constellations of these forces are likely to vary across systems so that processes facing hierarchical systems such as the US or English systems, may differ from those which may face egalitarian systems like the German or Scandinavian ones.

How such forces will unfold depends again on the motives that drive the actors operating within the system, what limitations they face, what possibilities and resources they have at their disposal while pursuing their goals, and not the least what the established norms, values and traditions are that shape their motivations and goals. Before moving on I shall

4 This holds in particular true for the US case because of its size and diversity with private top research universities like Harvard, MIT and Stanford, state systems such as California, New York or Illinois that comprise top research universities, less exclusive state universities, and open access vocationally oriented community colleges.

engage in a small theoretical exercise by discussing how institutional may develop strategies under a set of conditions specified below (cf. fig. 2).

Figure 2. Institutional strategies in higher education systems

	Relationship between institutions	
Motive for action	**Organic**	**Hierarchic**
Goal	1 Develop specialty	2 Compete
Norm	3 Define function	4 Determine rank

Institutions may conceive the order in which they find themselves as a *norm* that they have to satisfy continuously so that each institution is expected to develop its function and find its place within the system. This may be done in different ways depending on the type of order in which the strategy is developed. Within the organic order their position is defined by the tasks, function, specialty or niche they occupy within the higher education system. Within the hierarchic order their position is defined by rank, by the score an institution obtains, compared to other instiutions. Norm oriented action strategies as they are defined here, imply that the actors will defend what they perceive as established positions and rights.

Alternatively the actors may perceive the order in which they find themselves as an arena where various *goals* may be pursued, and where each institution is jockeying for a position that matches their aspirations as closely as possible. Again different strategies are likely to developed within different orders. Within the organic order institutional aspirations are likely to focus on developing particular strengths such as a specialty or niche that is likely to secure an uncontested position within the system. Within the hierachical order institutional aspirations are likely to turn on how to compete in order to improve their position in the rank order with the ultimate goal of ascending to the top of the hierarchy and become the best. Goal oriented strategies imply that the actors actively strive to developing their specialties or to competing in ways that make it possible to fill the function or occupy the position they desire within the institutional hierarchy. Whereas the first goal of specialization indicates a push in the direction of a more differentiated higher education system, the latter competitive goal indicates a more unitary and standardized system in the sense that competition for academic recognition and esteem presupposes a formal establishment of criteria in order to measure how well competitors do in relation to one another.[5]

Below I shall assume that the actors (universities and colleges) will take some conditions of action for granted and try to affect (amend, bend or eliminate) others. When major reform proposals about higher education system integration are launched, they may be perceived as harbingers of threats against the established order. The threat may come from two sides. One kind of threat means that established organizational forms and administrative

5 With the concepts of 'order' and 'motives for action' I have taken a pair of fundamental concepts in social science analysis – *order* and *action* – as a point of departure (cfr. Alexander 1982: 65).

arrangements are shaken and thus affect institutional as well as individual autonomy relative to administrative power and superior state influence. The second kind means that where institutions previously might find their place within an order by cultivating their peculiar character, they are now all in principle given their position by political authorities. Some institutions are likely to try to defend or resurrect the order that was because they want to hold on to their tasks and positions in order to protect cherished privileges and values. Others may see a possibility to redefine their tasks and opt for new positions if they find that the reforms will make it easier for them to gain access to privileges or prestige or to realize specific values that are important to them.

Essence of education – learning method or occupational knowledge?

As already indicated, higher education integration tends to come with conflicting principles for institutional order, as recent developments have demonstrated in a number of countries (Bleiklie and Byrkjeflot 2002, Kogan et al 2000). There are forces that clearly push for standardization and hierachization.Yet, institutions are different in a number of important respects because they educate students for different occupations, are rooted in different traditions of education and occupational training and have ties with different parts of the labor market with their corresponding occupational or professional groups. These factors limit the extent to which it is possible to move unequivocally towards a hierarchical system because many institutions may feel compelled to cultivate their peculiar form of occupational training whether they want to or not. Furthermore, these institutions are likely to prefer cultivating particular skills in the future as well, and this ambition is likely to remain alongside the goal of making the highest possible score in the overall competition for resources and prestige among institutions.

The two kinds of order do not only express an abstract organizational principle that can be implemented without problems through political reforms, but represent a more comprehensive and complex set of social relations. I am not going to give a detailed description of such relations here, but would like to point out some characteristics that may be useful for further analysis. The point of departure is the following proposition: The individual peculiarties of higher education institutions are to a large extent determined by their relations with the labor market. Education may mean that students are taught a specific occupational skill, where the content of their education by and large is determined by what is considered the knowledge for the conduct of the occupation. This is the kind of education that characterizes many vocational colleges e.g. in nursing or engineering. However, education may also have as its purpose to teach students a specific academic discipline that is considered to provide no other direct occupational knowledge than teaching and research within the discipline itself. When we talk about the value of this kind of education on the labor market beyond the specific research and teaching qualifications it may provide, we often think of more general abilities that may be useful in a range of different occupations. I am referring to such qualities as the ability to work independently, to plan and to collect, analyze and present large quantities of information about complex subject matters. These are abilities

that tend to be cultivated by academic disciplines at the so called free university faculties.

An education system that consists exclusively of vocational institutions – each one with its particular criteria of valuation of qualifications related to the ability to exercise a specific profession – has cultivated a purely organic, specialized model. An educational system that is made up by integrated disciplinary courses within a unitary system of degrees, exams and qualification criteria in which students may compose individual educational tracks, based on courses in different disciplines, has cultivated a purely hierarchical model.

However, the educational ideals that characterize and shape higher education systems and specific educations within them, are dynamic, as are the requirements of the labor market. The degree of vocational specialization as opposed to liberal generalist orientation may vary along a number of dimensions:

a) Variation across disciplines or subject areas may be illustrated by the difference between degree studies in arts and sciences or liberal undergraduate college education on the one hand as opposed to professional degree studies in medicine, law and enginering or vocational college education on the other. The aim of the former is to educate students in disciplines that may be combined with other subjects in a degree study that constitute a complete education through which students aquire general skills which may qualify them for a number of different occupations. The aim of the latter is not just to educate students for specific occupations, the education is also the way in which new recruits qualify for membership in and are introduced to a community of praticioners. Members of the occupation or the professional association may also take an interest in and try to influence educational programs and capacity in order to improve the quality and regulate supply and protect the market position of the profession.

b) Variation over time takes place as the notions about the functions of higher education evolve. During the 1980s, in a period characterized by dwindeling or stagnating student numbers and budgets, there was a drive in many countries in the Western world to make higher education more vocationally oriented. The argument won acceptance that society needed more manpower skilled specificly for clearly defined occupational roles, rather then generalists. This justified an expansion of short cyckle vocationally oriented studies, particularly in business administration (Berg1992, Gellert and Rau 1992, Lamoure and Lamoure Rontopoulou 1992, Neave 1992, Pratt 1992, Vabø 1994). In the late 1988s and early 1990s, this argument was turned around by educational reformers, arguing that what society needed was as highly qualified a work force as possible. In a highly competitive, mobile and knowledge driven economy, a flexible, highly qualified, independent and entrpreneurial work force is called for. The best way to achieve such a goal was to produce as many candidates as possible at the highest possible level of qualification. This argument justified renewed emphasis on graduate education, particularly at the doctoral level (Bleiklie, Høstaker and Vabø 2000).

c) Variation across countries demonstrates that there are distinct educational traditions in which countries differ as to the importance and prestige that is accorded to vocational specialization versus generalist qualifications. The education system as well as occupational life may reflect this in various ways. Leadership selecetion is one case in point. Whereas German leaders of industry traditionally have been technical experts (engineers), English

leaders have tended to have liberal arts education, preferrably from top Universities like Oxford or Cambridge. This also illustrates that the degrees of 'specialization' and 'generalization' are not given inherent characterics of an education or an occupation, but reflects how they are socially constructed. By social social construction in this case I mean what aspects of an the occupational role is emphasized in different education systems and how the links between the education system, various occupational roles and the labor market are established in different societies. Furthermore educational systems may organize their educational programs and degree systems in highly different manners. Teichler (1988) demonstrated that there may be a wide variety of ways in which short cykle and graduate studies, as well as the relations between institutions by which they are provided, may be organized. He analyzed a number of such organizational forms that he considered approximations of a 'diversified model' of higher education. By 'diversified' he roughly meant a system: 1) that is made up by a multitude of educational environments catering to a wide range of educational needs from the classic highly academic to more immediate vocational needs, 2) that has a relatively steep hierarchy of institutions or course programs according to academic 'quality', 3) that has an elite sector within the hierarchy in which education is closely linked to research and shaped by academic disciplines, 4) in which institutions and course programs are diversified not merely 'vertically' according to rank, but also differ substantially 'horizontally' as to their 'character', goals, content of courses and typical competencies fostered, 5) in which the overall setting of institutions and course programs is dynamic in providing permeability for the students, in blurred boundaries between sectors and in relatively frequent changes of ranks between institutions and units over a period of time (Teichler 1988: 55f). He distinguished between systems according to how they deviate from the standard diversified model: a) a hiearchical system with one or two institutions considered the leading ones and a limited variety of institutional types (Japan), b) a binary system with a clear distinction, but also permeability between autonomous universities on the one hand and predominantly locally controlled public polytechnics and other colleges on the other (Britain), c) a supplemented binary structure in which universities and colleges of advanced education were supplemented with a third sector, institutions for technical and further education (Australia), d) a heterogenous system in which clearly segmented functional divisions exists such as an elite-training sector (Grandes Ecoles), a vocationally oriented sector, the socializing sector and the academic sector (France), and e) a system of clearly distinct institutional types, the university and non-university sectors with little permeability (Netherlands).

Institutional integration whereby higher education institutions in a number of countries in recent years have been brought under common public, legislative and budgetary systems, has contributed to pushing higher education systems in the direction of more hierarchical structures. This means that formal criteria have been developed and introduced in order to formalize a rank order between categories of institutions. An early American example of this is the "California Master Plan" from 1960 which regulates the specialization and function of the institutions within the California system: the research universities (University of California institutions), universities emphasizing applied research and teaching (State universities), liberal or vocational short cycle undergraduate level teaching institutions

(Community colleges) (Kerr 1995, Rothblatt 1992). The hierarchy is organized according to what degrees an institution is entitled to give (doctoral, master level, bachelor level), the research component and the selectiveness of student admission, from the highly selective top research universities to non-selective community colleges (Altbach et al. 2001). Several European countries (England, Germany and Norway) introduced binary divisions in the 1960s whereby university level education and vocational and short cycle college education were organized separately. However, the divisions tended to break down over time, both in the sense that short cycle courses could be integrated parts of university degrees and because institutions in the college sector have tried to expand their teaching programs by introducing university level degrees and to introduce a research component. More recent attempts at formal integration – e.g. by the 29 countries that have signed the 'Bologna declaration' – have aimed at standardizing the degree structure across institutions, opening the system to competition and cross national mobility.

Many of the objections that may be raised in connection with integration of higher education systems may be understood as reactions from disciplinary and professional groups that feel pressured by authorities in their attempts to exercise political-administrative control. Another set of objections may be caused by assumed or experienced negative effects of institutional mergers of previously separate universities, liberal and/or vocational colleges that bring together radically different educational models. Such mergers has happened in one form or another countries like Denmark, Norway, South Africa and Sweden. In Norway a number of vocational institutions operating according to a specialized model experienced mergers under an academic hierarchical model as threatening. For instance traditional teacher colleges, emphasizing practical pedagogics, were not too happy at the prospect of being judged by their contributions to academic research (Halvorsen and Michelsen 2002). A number of practically oriented institutions may thus feel threatened by being integrated in a system where they are going to find their place in a hierarchically organized setting according to criteria that are alien to them. To the extent that an institution includes vocationally oriented programs providing skills in demand from specific businesses or client groups, the introduction of evaluation criteria that focus on research are more likely to face resistance. Furthermore, it is not difficult to imagine that important interests in society are likely to be more interested in the ability of candidates to meet the practical requirements of a profession than in their academic excellence.[6] One example may be the preference that employers may have for engineers educated at vocational colleges rather than university educated civil engineers. Whereas the former may be perceived as cheaper, more practically oriented and better at adapting to the needs of the employer, civil engineers may be perceived as more expensive, theoretically oriented and more 'difficult' to adapt. Similarly the replacement that took place in Norway of university educated teachers by college educated teachers in secondary schools

6 The former Norwegian Education Minister Gudmund Hernes expressed this in an interview when he argued that most students are educated to do a practical job and not to do research, *" …it is not a goal in itself that all doctors write articles in the Journal of the Norwegian Medical Association or in The New England Journal of Medicine, but it is quite important that they (surgeons) know where to cut and don't forget the scalpel inside while they're at it."* (Interview 18. Nov. 94). He illustrated the same point by pointing out the he would prefer that college educated cooks know how to make tasty food that can get their restaurants stars in the Michelin guide rather than how to write learned reports on grammatical peculiarities in French menus.

in the 1970s was based on the assumption that pupils needed teachers with less disciplinary knowledge and more pedagogical skills. On the other hand an institution dominated by a hierarchical disciplinary model will easily feel threatened at the prospect of being merged with institutions that are likely to challenge the hierarchical model. This may be illustrated by negative reactions from Norwegian research universities against the idea that was floated in the early 1990s of putting an equal emphasis on pedagogical and research qualifications throughout the entire higher education system when making faculty hiring decisions.

However, integration into a higher education system where all institutions may compete for the same resources based on a common set of criteria may also be seen as a set of new opportunities. Vocational and other shorter cyckle institutions may attract new groups of students when it becomes easy to integrate college education with graduate education at a university.

We may assume that the way in which institutions react to integration depends on the extent to which they see their interests better served by a new more integrated system than by the system of yore. This does not necessarily mean that institutions merely look to making a better deal in terms of resources and prestige. Traditions and identity may be equally important for educational institutions when they form their opinion about integration. The main point here is that motives aside, I assume that the actors are goal oriented and that their attitude toward integration is determined by what they believe serves their interests and is compatible with their values. Tensions between theoretical qualifications that serve as criteria for establishing an academic rank order and the demand for practical skills is something that one may find in many educational settings, from high level academic and professional programs to more practically oriented vocational training. Such tensions mean that it is not easy to predict how institutions will respond to reforms aiming at institutional integration.

Although it may be difficult to predict the exact course of future developments, one may be quite confident that the tension between hierarchical and organic principles will live on. The tension is not just found between traditional research universities and vocationally oriented institutions. We find the same tension within research universities as well, clearly expressed for instance during the previously mentioned attempts at ‘vocationalization’ of university education during the 1980s. However, there are important differences between traditional research universities and colleges, as well as between different types of colleges as to how such tensions are expressed and dealt with.

In relation to the formally fragmented systems that existed previously, the current institutional integration means two things. The introduction of unitary degree and qualification structures clearly imply standardization and hierarchization based on standards determined by the universities. This again means that it is the academic ideals with their theoretical and methodological requirements that form the basis of valuation and positions within the system. However, the hierarchy is open to mobility on several levels. In Europe student mobility has been strengthened by such things as the introduction of a standardized system for credits (ECTS), thus facilitating (in principle at least) student mobility at the European level as well as nationally. Modularization implies a break with traditional rather ideosyncratic study programs that have been common in a number of countries by breaking the programs down into what is intended to be formally comparable units in a way that greatly

facilitates student mobility across institutional and national borders. These developments have opened up some attractive opportunities for non-university institutions that are based on subjects in the arts and sciences or in vocational studies with ambitions to become academic professional studies (e.g. nursing). To the extent that these institutions evaluate themselves in terms of the academic criteria laid down by the univesities, modularization and standardization open up the possibility of upgrading their course programs to university standards. For other more vocationally oriented institutions these standards represent a problem. Colleges that are teaching practical skills necessary to professions like teaching, nursing or engineering, may experience the theory based performance criteria of the university as a threat against the essential character of their education and profession (cf. note 6). The ambiguities and conflicts within and across different institutions are not just an outcome of the differences between vocational subjects and academic disciplines. They may also be understood in terms of the development of the concept of knowledge and the way in which knowledge is developed and appraised in modern societies. As I shall argue below the different concepts of knowledge discussed above is of direct relevance to hierarchy and specialization as organizing principles in higher education systems.

The significance of an extended concept of knowledge

The distinction between Mode 1 and Mode 2 knowledge production formulated by Gibbons et al. (1994) is one of the most sweeping and widely known statements about a new extended concept of knowledge. One way in which to understand this distinction is to start with the tension within the concept of knowledge itself. Broadly speaking, there is one category of definitions that focuses on knowledge as some kind of *outcome*.[7] What is called 'practical knowledge' or generally 'utility oriented' knowledge belongs to this category. As a contrast there is a definition that focuses on knowledge as *procedure*.[8] This defining characteristic is shared by definitions that focus on knowledge as a process either widely defined as a set of cultural activities or as a specific procedure like in traditional definitions of scientific method. A number of frequently used pairs of concepts in the literature reflect this shared underlying distinction between *knowledge as outcome* and *knowledge as procedure*.[9]

The extended concept of knowledge means that we are facing a new ideological climate that moves the emphasis in knowledge production from procedure to outcome. Although the emphasis may be new, the concepts of knowledge involved have been around

7 Cf. Daniel Bell's well-known definition of knowledge as "a set of organized statements of fact or ideas" (Bell 1973: 41).

8 Cf. Knorr Cetina's concept of 'epistemic cultures' that distinguishes between cultures on the basis of process, or on how epistemic cultures 'make knowledge' in different ways (Knorr Cetina 1999).

9 Cf. the distinctions between 'theoretical' and 'practical' knowledge, a 'cultural' and 'utilitarian' purpose for basic research and higher education (Kogan et al. 2000), 'applied' and 'pure' research modes (Becher 1989). A similar notion underpins the distinction between 'Mode 1' and 'Mode 2' knowledge production (Gibbons et al 1994).

for a long time. It is no novelty that result oriented knowledge exists in academia (cf. law, medicine, engineering, applied science etc.), but its role and status have changed.

The change is visible in a number of ways. The process of justifying academia has changed, and new forms of organizing and funding research have emerged. Visible signs of this are the emergence of research parks, increased emphasis on externally funded research and the proliferation of thematic cross-disciplinary research centers.

In the follow-up to Gibbons et al. (1994) the authors emphasize diversity, and give a more contextual and 'thick' description of the topic (Nowotny et al (2001). The analysis brings forth the complexity of the issue of knowledge and changes in knowledge production. Thus they argue that the movement from Mode 1 to Mode 2 knowledge production is neither a deterministic nor a uniform process. One of their main contentions is that 'science' or 'research' is becoming more 'contextualized': Whereas science traditionally has been regarded as an inner directed, intellectually self-propelled enterprise that has 'spoken' to society, it now increasingly finds itself integrated in society, embedded in a context that increasingly 'speaks back' to science. The process whereby this happens is extremely complex, as are its implications. However, one way in which we may illustrate what is implied in terms of research is the presumed movement away from a basic and disciplinary research mode in which the researcher define the research problem, directs the research process and communicate findings to the public through scientific publication. The movement goes in the direction of an applied trans-disciplinary mode in which the research problem may be defined by wider teams of people and where the customer or end-user takes part in the definition of the research problem, monitors and takes part in the research process and may influence when and how the results are communicated.

This process is easier to understand if it is seen in the context of the transition of higher education from elite to mass system in North America, Europe and elsewhere. The transition meant that a system that for centuries catered to a very small fraction of the population, in the matter of four decades grew from serving a few percent, to encompassing about one half of each new generation. Research has experienced a similar growth, which means that employers - private companies, organizations and public enterprises - increasingly need research in order to do their job properly. They express this need in various ways. Partly they start to buy or produce their own research. Partly they need research trained employees in order to apply research-based products. But as higher education institutions become more influential because research and scientific values become more widespread in society, they also become exposed to a stronger and more diverse influence from their surroundings - a steadily more informed and better educated public. Thus there is a two-way development of steadily stronger inter-relationships and mutual influences. The development also affects our notions about what research and academic activity is all about. Although this may expose universities to a pressure to be more useful, this utilitarian pressure is not uniform because the needs of those who express them are more varied than ever.

Among the factors that add to the development is the integration of higher education systems and with it the inclusion of a wide array of previously distinct vocational schools into the higher education system. This brings in new constituencies with their often idiosyncratic ideas about knowledge into the higher education system, and contribute to the dilution of

traditional scientific conceptions of knowledge. Put differently: as society becomes more 'knowledgeable', higher education comes under pressure to expand the kinds and types of knowledge it provides and to diversify the criteria by which it is judged. This takes place through a series of interrelationships between universities and society. First through education, since higher participation rates mean that increasing ratios of the population gain experience from research and academic culture. This is likely to strengthen ties between higher education and society. Increased use of research, furthermore, may have a number of effects or fill a number of functions. One function is to turn scientific knowledge, "truth oriented knowledge" into practical "utility oriented" knowledge about what works. The belief in the possibility of establishing unbroken links between scientific research, technology development, product development and profitable economic enterprise has received much attention and investment. It has resulted in the establishment of research parks and similar organizational structures in order to bring university research and industry together. But other kinds of knowledge production are also important in this context: in social sciences and humanities, the applied function of research is in many cases to enlighten or improve the conceptual understanding or empirical underpinning of an issue, e.g. evaluation of a re-organization of public hospitals, rather than provide applicable research findings. In such a case "truth oriented" knowledge has an immediate practical value for the user. None of these forms of knowledge are new. The reason for emphasizing the differences between them is that the forms of knowledge that might be called for by end users may be of different kinds. Consequently the conceptions of 'useful' and 'relevant' knowledge may vary, as may the implications of an increased emphasis on utility.

It is quite common to regard massification as an international process that affected educational systems and societies, at least in the Europe, North America and Austral-Asia, in a uniform way with respect to a number of general characteristics (Ramirez 2003). Increased participation rates made higher education and research important to steadily increasing population groups, but at the same less exclusive and less associated with elevated social status. At the same time the number of higher education faculty grew, and university professors in particular have felt considerably less exclusive than before, as they have experienced a declining income in relative terms and a loss of power and influence inside academia in absolute terms. However, the exact implications of massification have varied across countries depending on what institutional and organizational patterns were developed in order to deal with higher education expansion (Teichler 1988).

The changing social function of the universities, it has been argued, is sometimes confused with their scientific function (Kogan et al. 2000, Nowotny et al. 2001). Whereas there is little evidence to support the notion of deteriorating academic quality in students and faculty, it is obvious that both students and faculty enjoy less social elite status than they used to. Counter strategies aiming at preserving an elitist element within the higher education system by creating binary or stratified systems in a number of European countries have failed. The idea that one can establish and preserve an effective formal division between institutions that are focused on pure research and institutions that are more utility oriented in their approach to knowledge production, in order to protect the former against "external influence", have so far been unsuccessful. Whilst non-university institutions have tried to become

research institutions, research universities have never given up more utility oriented, applied research and vocationally oriented education programs. To the contrary, university-industry ties, particularly for major US research universities, have become increasingly important (Powell and Owen-Smith 1998, Ramirez 2003, Slaughter and Leslie 1997, Turk-Bicakci and Brint 2004). Once established, formal divides between types of higher education institutions have tended to break down. The reason for the failure therefore is that the attempts at isolating the 'scientific' core have been based on premises (the aim of preserving elite status) that underestimated the forces – of 'academic' as well as 'applied drift' – within higher education itself. [10] Put differently: as the 'scientific core' expands, it becomes 'diluted' and infused with 'social', more utilitarian demands and needs. This being said, it is important to keep in mind that the tendencies described above do not mean that higher education systems necessarily are converging. Although they are faced with very similar challenges caused by growth and processes related to growth, we know from comparative studies of reforms and change in higher education that the way in which such problems are handled may differ considerably and often in ways that preserve rather then reduce nationally distinct characteristics (Kogan et al. 2000, Musselin 1999). If we look at the situation in the USA it is somewhat different. Overall, the patterns of specialization as well as the hierarchy seem to be more settled and stable. Among the reasons for this may be the fact that the US system expanded earlier under different economic and social conditions before higher education became 'a mature industry' (Levine 2001); that categories of institutions and the relationships between them have evolved over time and not as part of a master plan (excepting some systems at state level as mentioned previously); and that the US higher education system today is regarded as a model for others to emulate rather than a system that need to learn from others. Finally, one may ask whether the size and diversity of the US higher education system makes it uniquely capable of absorbing growth and change while keeping its basic structural features.

From the point of view of political authorities and institutional leaders growth in higher education has changed the conditions of control and management radically. The size of higher education budgets has gone from an insignificant fraction to a considerable percentage of public budgets. This has made higher education much more visible and for that reason more politically salient. Furthermore, what higher education institutions do today directly affect many voters, as students, consumers of research or as employees. This creates a powerful political motive for controlling costs and performance. Growth has also affected the conditions of managerial control and academic autonomy. Whereas a small institutionally and socially homogenous system lends itself to informal mechanisms of management and control, the sharp growth and emergence of an institutionally and socially far more heterogeneous and functionally more complex system, has been followed by the introduction of more formal mechanisms of management control and the rise of stronger administrative apparatuses nationally as well as within institutions. This has also resulted in more visible demands to make universities more efficient and more accountable and raised controversies about the state and function of academic autonomy as we have seen in the discussions about 'the

10 This does not mean that such strategies generally are destined to fail. There are examples of successful differentiation strategies, according to some observers, with "The California Master Plan" as the most prominent example (Kerr 1995, Rothblatt 1992).

Evaluative State' (Neave 1988: 7) and New Public Management ideals in higher education (Bleiklie 1998).[11] However, the pressure for efficiency is diffuse and ambiguous and offers no immediate and unequivocal solutions. Comparative evidence from countries such as England, France, Germany, Norway and Sweden suggest that the solutions have been contested issues that are shaped by established institutional structures (Kogan et al. 2000, Musselin 1999).

These observations should sensitize us as to the complexity of the relationship between higher education, state and society. They demonstrate how an apparently simple and straightforward process, higher education integration as a response to massification, has become linked to a number of tendencies that raise the question of the consistency as well as the direction of future developments within higher education systems. So far little has been offered that may explain patterns of variation along the dimensions of hierarchy and specialization save for the initial suggestion of institutional inertia and path dependency. In the following section I shall offer a few suggestions based on the consept of 'knowledge regimes'.

Knowledge regimes, interests and alliances

The previous discussion has emphasized how higher education integration must be understood against the backdrop of massification, expansion and the need to control costs linked to a more utility oriented conception of knowledge. The development described initially, can be seen as the outcome of the struggle to define the true nature of knowledge between actors such as states and politicians, institutional leaders and students, researchers and intellectuals, consultants and business leaders. *Knowledge interests* are therefore the key, together with the linked concepts of *knowledge alliances* and *knowledge regimes*. In order to understand the different trajectories higher education systems have followed I shall distinguish between a few ideal typical constellations of knowledge regimes and the actor constellations and interests on which they are based. Then I shall return to the original question of convergence versus path dependency. Finally I shall draw some implications regarding future developments.

Modern universities and higher education systems are influenced by a number of developments that have implied a thrust in the direction of an extended concept of knowledge and a stronger utility orientation. In the following I shall argue that the new emerging knowledge regimes may be divided into at the least two main groups. On the one hand there is *an academic capitalist regime*, driven by university-industry alliances, economic interests and a commercial logic. In spite of its huge influence on the discourse about higher education and as a symbol of current changes in higher education institutions, the notion of 'academic capitalism' (Slaughter and Leslie 1997) or 'entrepreneurial universities' (Clark 1998), industry funding is an important source to relatively few top research universities, particularly in the US (Powell and Owen-Smith 1998, Turk-Bicakci and Brint 2004). Public funding and ownership of higher education institutions by national or regional governments is still the

11 This discussion should be considered in the wider context of the 'New Public Management' movement in public administration reform internationally (Lægreid og Pedersen 1999, Pollitt 1990).

dominant pattern. This might be taken as an argument to the effect that stability prevails in the face of all rhetoric about fundamental change.

However, the way in which public authorities run universities has changed fundamentally, heavily influenced by notions of 'academic capitalism' and 'entrepreneurial universities' which manifests itself in the notion of universities as business enterprises and introduction of quasi-market mechanisms in order to promote competition and cost effectiveness. These *public managerialist regimes* are driven by university-state alliances, political-administrative interests and a semi-competitive logic based on incentive policies where part of the public support depends on teaching and/or research performance. They come, however, in different versions that may be understood against the backdrop of the previous public regimes they have developed from. Comparing the systems of England, Norway and Sweden, Kogan et al (2000) point out that the public regimes that dominated the systems until the 1980s or 1990s were different in important respects. Although they in principle were public, different actor constellations, alliances and interests characterized the regimes.

The English regime was until about 1980 dominated by co-opted academic elites who under state protection could offer considerable autonomy to the universities and where policies contributed to maintaining the elite structure with a few top universities that stood out from the rest in terms of academic prestige and social standing. The English version of the public managerialist regime that emerged during the 1980s and 1990s was much more centralized than previously. Through centralized competitive evaluation procedures such as the Research Assessment Exercises, the field was in principle opened up for all higher education institutions, polytechnics as well as universities to compete for research funding and academic status. This abolished the binary divide between university and non-university institutions and made in principle possible a more seamless integration of higher education. However, in practice the Research Assessment Exercises has confirmed the academic status hierarchy, in which a few top institutions receive most of the public research funding, whereas the other institutions must struggle to fund their research from other sources, focus on applied short term research contracts or devote themselves to teaching.

The Swedish regime between 1977 and 1994 had corporatist features, dominated by state authorities and unions and strongly influenced by political priorities. Swedish higher education institutions were all formally called *högskola* although there were clear differences between research universities and non-university institutions. However, the absence of formal divisions between types of institutions meant that there were fewer barriers against integration. The Swedish version of a public managerialist regime was introduced following a transition from a social democratic to a conservative government and came with a decentralizing move in which central government authorities in the name of institutional autonomy transferred decision making authority to the institutions. At the same time the internal institutional leadership was strengthened and external influence through external representation on university boards was established. In the years that followed developments have been characterized by tendencies of 'academic drift' whereby a number of previously non-research university institutions have sought to upgrade themselves academically by establishing research units and graduate education program and in some other cases by

mergers between research universities and groups of colleges.

The Norwegian regime was statist, dominated by higher education institutions and the Ministry of education. Since the 1970s Norway had a binary system with a clear formal separation between the non-university college sector and the universities, although some permeability existed between the liberal regional colleges (*distriktshøyskoler*) that were established in the 1970s and the universities. The Norwegian public managerialist regime has come with a mixture of centralizing and decentralizing moves whereby central authorities have sought to establish a formal framework that may make Norwegian higher education institutions more efficient, more flexible, more sensitive to students' needs and more open to student mobility across institutions. Activity planning and incentive policies, emphasizing rewarding teaching efficiency and student throughput have been tools major policy tools. The higher education legislation of 1995 which formally abolished the binary system, opened up for non-university institutions to gain university status by establishing a set of criteria and procedures to certify institutions that want to upgrade themselves to research universities. The legislation also reduced the number of non-university colleges from about 200 to 26, starting a comprehensive merger process. One or two institutions are expected to be able to establish themselves as research universities in the years to come. On the other hand a number of vocational institutions (e.g. teacher colleges) were reluctant to being merged with other colleges that did not share their educational traditions and criteria of evaluation.

A common characteristic of the organization of higher education systems in the three countries is that formal divisions between types of institutions have been opened up. The mechanisms that have been established to facilitate institutional mobility towards research university status are different. In some ways these differences are consistent with established institutional system features, such as the elite character of the English system and the more egalitarian Norwegian and Swedish systems. It is typical of the latter two that they offer institutions more flexible procedures and a number of opportunities to upgrade themselves academically, partly by dedicating resources through establishment of combined research and teaching positions such as associate and full professorships, and partly by offering financial opportunities by making research funds available. One example of this is the Norwegian research council's special program to strengthen research in the college sector.

These observations suggest first of all that when new knowledge regimes arise, their impact may be partial and vary depending on the conditions with which they are faced. The two emerging capitalist and managerialist regimes may be viewed as different responses to a number of general trends such as higher education expansion, the rise of 'knowledge society', and a different understanding of the purpose of higher education and research. What I have called an academic capitalist regime has in many ways become a global yardstick, despised by some, but espoused by many others. It has until now had a stronger impact on ideology and discourse than on the way in which universities are operated and funded. The practical impact of a commercial logic on Western university systems is still limited and concerns mainly a relatively small number of major research universities. In many public systems in Europe a semi-competitive logic between institutions has been introduced in which they compete for students and research funding. This semi-competitive logic has provided an important rationale for the integration of higher education systems. It is still early to

determine to what extent it will affect the systems in a uniform way. However, there is a clear variation as the extent to which non-research institutions have been inclined to fully engage themselves in a competition for academic prestige and research funding. Some of the variation I have argued is due to the fact that the identity and criteria of valuation of some institutions keeps them from engaging in a competition defined by a research based hierarchy. In other cases, the small prospects for return on investing in a competition, may serve as an effective deterrent.

Conclusion

The developments addressed in the previous discussion do not answer the initial question about whether we can expect a convergence of higher education systems in the direction of a hierarchical model or alternatively that national systems develop along distinct trajectories in which the tensions between hierarchical and functional principles will play themselves out in nationally different ways. What we have observed is that national systems are exposed to a similar set of developments such as higher education expansion, the rise of 'knowledge society' and a changed understanding of the purpose of higher education and research. These developments may have profound effects on higher education and research in the future.

Although the development has played out differently in individual countries, there is little doubt that integration and hierarchization have proceeded and become more prominent over the the years. Consequently, the development implies a move away from functionally specialized towards a more hierarchical and horizontally permeable systems. The tendency is most clearly pronounced at the level of ideologies and formal organizational structures.However, to what extent institutions actually cultivate their specialities in stead of moving upwards in the institutional hierarchy remains to be seen. For non-university institutions it will make a difference whether the system as a whole experience massive 'academic drift' and moves in the direction of the research university model, or whether such a movement only affects parts of the system, for instance only academically oriented liberal colleges, as opposed to more vocationally oriented colleges. The former alternative indicates that non-university colleges will eventually become integrated in a hierarchic regime based on academic standing. The latter alternative indicates that hiearchization based on the research university model will have a fragmenting rather than an integrating effect within a higher education system. In this case traditional research universities will have to find their place among institutions with different educational ideals within a system that is more fragmented and more clearly characterized by functional specialization. In such a fragmented system some institutions may want to cultivate their practical and vocationally oriented peculiarities whilst others will commence a process of 'academic drift' and start climbing in the academic hierarchical system. This might eventually lead to more pluralistic higher education systems

It is still a possibility that a further strengthening of hiearchization eventually will lead to fragmentation within higher education systems and the emergence of more varied mixes of functional specialization and hiearchization across national systems. This will eventually

counteract the converging tendencies indicated above. One factor that might strengthen fragmentation is the emergence of so-called virtual universities like University of Phoenix that sell tailor made course programs to large companies. Another important factor that point in the opposite direction is how changes in the economic structure affect alliances between sectors of the economy with occupational groups, educational institutions and the state. One assumption might be based on the observation that much of the institutional specialization within educational systems is based on trades and occupations of the industrial economy. As industrial society fades away and as post-industrial society rises, knowledge alliances between industry, its occupational groups, and the state are likely to be transformed. It is tempting to speculate that since many occupations in the expanding new sectors of the economy – e.g. computer-technology and bio-technology - are based on academic skills and forms of education that more easily lend themselves to integration in hierachical systems, this will weaken specialized knowledge. To what extent this will weaken functional specialization in general is still an open question. Future developments in the organization of higher education systems is therefore likely to be determined by what public authorities, businesses, academic institutions and students define as their knowledge interests and what kind of alliances they will form in the future.

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3. Diversification of Higher Education Systems: Patterns, Trends and Impacts

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Introduction

Universities are amongst the oldest institutions that have survived since the middle ages. Nevertheless, most universities and other academic institutions, which operate nowadays, were established in the last century. Since the end of the Second World War there has been a growing demand to widen access to higher education and change the elitist nature of universities. It seems that the last decade has posed the most demanding and complicated challenges for universities and other higher education institutions. Many higher education systems all over the world are currently in flux and operate in stormy waters. Diverse pressures, emanating from various sources, challenge academic traditions, structures and principles. Universities are expected today to be more accountable and transparent to the government and surrounding society, to become entrepreneurs in their search for diverse budgeting sources, to teach many more students from heterogeneous backgrounds and abilities, to incorporate the new information and communication technologies at various levels of the university operation, and to be attentive and adaptive to emerging political and societal changes (Kogan & Hanney, 2000; Neave, 2000; Sporn, 1999; UNESCO, 2003). Some changes purport to increase horizontal or vertical diversity in higher education systems, whereas others are aimed at decreasing such patterns.

The extent of diversity and homogeneity of higher education systems depends on various variables. Each national higher education system has external and internal boundaries that portray its horizontal and vertical structure at various levels. The external boundaries define basically which kind of institutions are included in or excluded from the higher education system. In some systems - tertiary level professional institutes are not considered as part of the higher education system because they do not award academic degrees - both a vertical (status) and horizontal distinction (differentiation between various type institutions). In other systems - very prestigious institutes, such as academies of science or notable research institutes, are not considered as an integral part of the higher education system. The authorization of granting degrees is not a definite criterion for including or excluding

institutions from the higher education system. Extensions of foreign universities which operate in different national settings do grant degrees, but of their own national institutions, and they are neither considered as a part of the national settings in which they operate, nor as a part of their mother institutions. In some countries the extensions form a very strong component of the higher education system. By depicting the external boundaries of various national higher education systems, it is possible to understand the size and basic structure of each system, as well as the vertical and horizontal structure of its institutions. The external boundaries do change from time to time if, for instance, non-academic institutions are upgraded to an academic status, or a new higher education law changes the status of tertiary-level institutions or research institutes.

The internal boundaries reflect the horizontal and vertical structures of any given higher education system in relation to a variety of variables: overall structure (unified, binary or segmented into several sectors), the interrelations between the public and private sectors, access policies, study programs, budgeting patterns, research and teaching policies, academic traditions and cultures, evaluation and accreditation, etc.

Some of the changes that took place in the last decade are at the international level, some are at the national level, and others are at the institutional level. This article examines changes that affect the horizontal and vertical structures of higher education systems at all three levels. The discussion analyses recent reforms that reflect changes at a continental level (mainly - the Bologna Process aiming at enhancing a unified higher education system in Europe); at a national level (focusing mainly on four Central and Eastern European countries); and at the institutional level. The discussion follows with examining the impact of some leading trends in higher education on horizontal and vertical patterns of diversity across higher education systems. It focuses on the trends of: widening access to higher education, changing modes of research, funding and government-higher education relations, the impact of the information and communication technologies, and the influence of globalization, accreditation, quality assurance and transnational policies on the structure and roles of higher education systems.

Continental Reform - The Bologna Process

The last decade has witnessed a wide scope reform in Europe aiming at consolidating and integrating the various national higher education systems in Europe into a harmonized and balanced continental system. Efforts to enhance academic cooperation and mobility in Europe started more than fifty years ago, after the end of the Second World War. Already in 1955, vice-chancellors and presidents of European universities met in Cambridge to reaffirm the potential of international cooperation among their institutions. A little less than a hundred participants from fifteen countries joined that meeting, the first General Assembly of European university heads, of what was to become in 1959 the Conférence des Recteurs Européens (Barblan, 2002). Since then many plans and endeavours have been initiated to promote cooperation between European universities in research, academic programs and

exchange of students and faculty, but only in the last fifteen years special actions have been taken in the direction of establishing a wholly-integrated European higher education system.

Interestingly, the most important events that enhanced the collaborative ventures between higher education leaders took place while celebrating important historical dates of medieval European universities. On September 18, 1988 - hundreds of participants from all over Europe, and from other parts of the world too, gathered in Bologna University to celebrate its 900th birthday. The leaders of the various governments of Europe were asked to recognize the contribution of the academic world to the shaping of ideas that had led to the integration of different national cultures into a harmonious European whole and the establishing of bridges between Western and Eastern Europe. One of the most important outcomes of this gathering was the drafting of the *Magna Charta Universitatum* signed by some 430 university vice-chancellors, rectors and presidents from all over Europe, asserting the importance of university autonomy and academic freedom, as well as the crucial role of universities in any meaningful social change (Bologna University, 1988).

In this festive event many important topics, related to academic excellence, university-society-industry relations, globalization, and to the functional roles of the academe in social and political change, were discussed, and many potential programs for further cooperation were suggested and successfully implemented in the years to come. One of the most successful projects has been the *ERASMUS* program, which constituted the flagship of European cooperation in the 1990s, by enhancing a growing scale of student exchanges by the thousands between European universities and other higher education institutions (Teichler & Maiworm, 1997). The capacity of integration of the *ERASMUS* program was based on the commitment of professors, from different European countries, ready to compare their courses with those of colleagues in other countries and to adapt teaching so that home and guest students could study together.

Another festive event took place in May 1998 at the Sorbonne University in France celebrating the 800th anniversary of the University of Paris. The French Minister of Education has invited his British, German and Italian counterparts to sign a declaration that urged institutions and governments in Europe to 'harmonize' academic services and university provision. The structure of the higher education systems of these four countries differs meaningfully, and the academic degrees awarded in each system reflect an immense diversity. For instance, a first degree student in Britain has to earn an "honours degree" in order to be entitled to proceed to graduate studies. In Germany the four- or five-years first degree is equivalent to a master degree in the Anglo-Saxon world. A "diploma" in Italy has several meanings and is given at different higher education levels, and some of the recipients of a first degree diploma in Italy are conferred also the title of *Dottore* (doctor) which frequently leads to misunderstandings in other countries. In France, there are first cycle diplomas after two years of study at a higher education institution, and second cycles of three and four years of study (Jablonska-Skinder & Teichler, 1992). In short, such diversities reflect a real "Tower of Babel" syndrome in academe.

A year after the Sorbonne Declaration was issued, the Italian Minister of Education proposed to hold a similar meeting in Bologna in June 1999. Many university representatives from twenty nine European countries attended. The Bologna Declaration enlarged the

proposals of the Sorbonne Declaration. On June 19, 1999 - representatives of twenty nine countries represented by the ministers responsible for higher education signed the Bologna Declaration and set on an intensive process which aims at establishing a harmonized joint Higher Education Area of Europe by 2010. In the following meetings of the Bologna Process leaders, that took place in Prague in 2001 and in Berlin in 2003, there were already representatives of thirty three countries that agreed mutually with goals of the Prague resp. Berlin Communiqués (Commission of the European Communities, 2003).

The Bologna Declaration specified the means to achieve its goal: the use of a common two-tier degree structure (BA and MA), the Diploma Supplement, the European Credit Transfer System, quality evaluation and the Europeanization of academic curricula. Many higher education systems in Europe had been based for centuries on a five-year (or even longer) first degree structure (which is equivalent to an MA degree). No bachelor level studies were available. The long degree resulted, among other things, in a high drop-out rate during the study period. Though in many European countries university level studies were, and in some are still, offered free with no tuition charge, the percentage of graduates is relatively small. In many European countries less than 20% of a relevant age cohort complete academic studies (UNESCO, 2003). Restructuring the academic degrees at many national jurisdictions has initiated deep changes in many countries. The application of the European Credit Transfer System entails the comparison of academic curricula, evaluation criteria and learning outcomes (Bolag, 2003). Cooperation in setting quality standards strengthens the transparency of academic programs and structures, so that trust could be given to the level achieved in the provision of higher education all over Europe. In the Berlin meeting in 2003 the harmonization of doctoral level studies was added to the Bologna Process agenda.

Each stage in advancing the Bologna Process requires greater commitment to the commonality of purpose and action in the field of higher education, so that, by 2010, higher education services will be able to flow freely from one side of the continent to the other, like material goods do today (Altbach & Teichler, 2001; Barblan, 2002; Commission of the European Communities, 2003; UNESCO, 2003). Students of all ages will draw on the most convenient services, relevant in the terms of their intellectual interests, career development or social commitments. For learners, and administrators, the freedom of movement in a common European intellectual space will offer equal conditions of access to many providers and users of higher education, equal conditions of assessment and recognition of services, of skills and competencies, and equal conditions of work and employment. The tools given by the Bologna Process are intended to invent a European higher education sufficiently strong to establish its attractiveness vis-á-vis the rest of the world, and particularly vis-á-vis the American model.

Since the Bologna Declaration was not legally binding, and because it emphasized mainly the importance of the tools of adaptation rather than outlining specific changes of substance, it enabled a flourish of new initiatives taken at institutional, regional, national and European levels. The various initiatives involve many organizations, like the Council of Europe, SOCRATES, TEMPUS, UNESCO-CEPES, National Unions of Students in Europe, the Association of Institutions of Vocational Higher Education, European University Association, etc. (Barblan, 2002).

By and large the Bologna Process aims at increasing students' and faculty mobility, as well as strengthening cooperation between higher education institutions in designing academic programs. As such it will contribute to the decreasing of diversity of higher education systems in Europe. It is expected that by 2010 all of the higher education systems in Europe would offer BA and MA degrees, but it is also likely that the implementation of the Bologna Process might take a longer time in some countries. In the last few years more and more voices have been echoed in the academic world to re-organize also the doctoral-level studies in many European universities on the American model of graduate studies. Several initiatives have already been taken in this direction, as will be discussed further on. Most likely, the Bologna Process will greatly contribute to the convergence of all European higher education systems.

Concurrently with decreasing the diversity between higher education systems at large, the architects of the Bologna Process have stressed from the outset that it is of tremendous importance to acknowledge the legitimacy of institutional diversity and heterogeneity of academic cultures. They emphasized that diversity must be preserved, even if convergence and common issues of concern should be implemented and pushed forward (UNESCO, 2003). Diversity is considered as an European wealth which should be preserved as an attractive and sustainable characteristic of the European higher education systems. In other words, the trend of convergence does not abolish the inherent diversity of higher education institutions in European countries. Various-type higher education institutions will continue to operate in all national settings, and they will portray both vertical differences (based on various hierarchical and ranking criteria) and horizontal differences (targeted to different student clienteles). However, it is most likely that institutes of the same kind, such as "world-class" research universities will exhibit in the future great resemblance (Altbach, 2004; European Commission, 2004).

National Reforms

The Bologna Process has naturally accelerated reforms in many European countries at the national level. Also beyond Europe, several macro level reforms took place at various national jurisdictions. Some of the reforms purported to increase institutional diversity, and provide greater degrees of freedom to academic leaders to diversify their budgeting sources, student clienteles and academic curricula. Other national reforms aimed at decreasing institutional diversity and have imposed strict criteria applying to all higher education institutions in any given national setting.

In this section we focus on changes and reforms that took place in four Central and Eastern European countries: the Czech Republic, Hungary, Poland, and Slovenia. It is important to note that the process of expanding the higher education boundaries in Central and Eastern European countries resembles in many aspects the expansion of higher education in Western European countries, but also differs in several domains. The main differences are specified below:

- The significant increase of higher education students in Central and Eastern European countries has taken place during a very short time;
- Some required changes to accommodate the fast expansion have been implemented extremely quickly, without providing sufficient time for the higher education institutions to prepare themselves satisfactorily for the new demands;
- Decision makers at all of the Central and Eastern European countries were subject to a long-standing tradition of strong central governance at all decision making levels. The very term of "state central governance" expresses the type of a management fully subordinated to the political leadership without any meaningful concept regarding institutional or educational autonomy, unlike the situation in many Western European countries that were exposed to the concept of a "benevolent state" planning, where "seldom has been an atmosphere or absolute distrust of overt rejection" to the new state regulations (File & Goedegebuure, 2003).

To offer diversified study opportunities to such big and heterogeneous groups of students, composed of not only fresh secondary-school graduates, but also of older applicants of different talents and capacities, ambitions and expectations, has been considered in the last decade as an urgent need in all Central and Eastern European countries.

In order to change significantly the general conditions of higher education functioning, restructure the higher education system, and expand the higher education infrastructure, legal actions have been taken in all of the countries. Acute legal measures were enacted in the Czech Republic and in Poland. The Czech Republic was considered as the most extreme case of the reinvention of government at the beginning of the 1990s, though in a very democratic and organised manner, complemented by the approval of the completely new higher education act already in the first month of this year (File and Goedegebuure, 2003).

In Hungary and Slovenia the changes were softer due to some previous changes. In Hungary, some elements of democratic and decentralised reforms had been implemented before 1990, and in the case of Slovenia, just two big universities existed at that time. In all of the four countries the higher education acts play an important role for enacting structural changes in the higher education systems. The involvement of all four countries in the international community in Europe from 1990 and the Bologna Process, initiated in 1999, started further legal changes along with the elaboration of important conceptual documents at national levels.

In the Czech case, the new Law of Higher Education in 1998 codified the new status of the higher education institutions in the decentralised system, and approved their autonomy, academic rights and high level of self-governance, and the amendment of the Law in 2001 made the three level education studies obligatory. Also in Poland, all laws regarding higher education in Poland were amended and/or completely changed (DWM in cooperation with DSW and Socrates/Erasmus Agency, 2002). In Hungary, the process of law amendments related not only to the Bologna Process goals, but also to the establishment of a new network of higher education institutions after mergers took place (Ministry of Education in Hungary, 2002). Slovenia needed approximately five years to reach the final decision about the way and the extent of how to implement the Bologna Process' recommendations. Slovenia is a small

country with only three universities (out of which one is a completely new university) and several small free-standing institutions. This is an environment where rapid changes cannot be accepted without problems. Similarly, a small national job market was unable to meet the new type of graduates without prior assessment of their employability. The provisions of the new act (Higher Education Act, 2004) made obligatory not only the three-level degree studies, but also the introduction of the European Credit Transfer System and credits accumulation, transferable credits from life long learning courses from post-secondary vocational education, new mechanism of quality assurance and financing.

The structure of higher education studies in all four countries before 1990 was similar; most study programs were of the same duration (in average 5 years) leading to the same level of academic degrees. After almost a general initial reluctance to accept seriously the ideas suggested by the Sorbonne Declaration and the adoption of the Bologna Declaration, all of the four countries proceeded in the last years in implementing a new study structure (a three-level system of bachelor, master and doctoral study programs).

The Czech and Slovenian approaches to the introduction of the vertical stratification of higher education studies portray some interesting differences. While the Czech higher education act introduced the three-level degree studies in 1998 and the amendment of 2001 stipulated this study structure as obligatory with exceptions to be necessarily agreed by the Accreditation Commission, the adoption of similar legal provisions in Slovenia needed significantly more time.

On the other hand, in was assumed in the Czech Republic that there is no need to specify in the Law the detailed Bologna objectives (ECTS introduction, modular studies, accumulation of credits etc.), but rather encourage their achievement through various policy documents and different types of motivations, while in Slovenia most of these acts were specified in the Higher Education Law and made legally obligatory.

The Hungarian dual system declares that universities and colleges exist side by side offering different study programs. The distinction between a university and a college is based on several distinct criteria. The special process of integration of higher education institutions initiated by the amendment of Higher Education Act in 1996 can be found only in Hungary, not in any of the three remaining countries. Further amendment of the Act and the adoption of the Act on Restructuring the Institutions of Higher Education in 1999 was aimed to continue the reform in decreasing the number of institutions with the fundamental goals declared as follows: “Extending educational opportunities by establishing multi-faculty, multidisciplinary institutions, improving facilities for research and development, setting up regional intellectual centres and strengthening the relationship between institutions and their environment” (Ministry of Education in Hungary, 2002). To implement these goals was not easy and has been accompanied by different views expressed by university leaders and academics, including fears to lose their former identity, market position, formerly gained reputation, etc. Anyway, this new horizontally structured network of higher education institutions, based on the goals specified above, started its functioning in January of 2000. It includes 18 state universities, 13 state colleges, 5 church universities, 22 church colleges and 12 private and foundation institutions (Source: www.om.hu) with the hope that:”… a stable institutional network has been established for the next few decades which, based on international

examples, may be affected by minor changes but the basic structure of which will accompany in the next millennium" (Ministry of Education in Hungary, 2002)

The Hungarian Report on the Bologna Process implementation prepared for the Berlin meeting in 2003 expressed that this duality between higher education institutions should be gradually dissolved (File & Goedegebuure, 2003) and a sequence of bachelor and master programs and degrees built.

In the Czech Republic, the Higher Education Act of 1998 stipulates the frame definition of the different types of higher education institutions: higher education institutions of university type provide all levels of study programs, while higher education institutions of non-university type provide primarily bachelor study programs. Some non-university institutions may offer master study programs, but they are not allowed to provide doctoral study programs. The type of each higher education institution should be approved by the Accreditation Commission on the basis of its expert view (Act No.111, 1998). In fact, the Czech approach takes into consideration at least some criteria similar to those used for the definition of types of higher education institutions in Hungary (types of study programs, number of professors) but leaves to the Accreditation Commission to decide which type is any given institution, rather than define explicitly in advance the types of institutions in the Higher Education Law.

The Czech institutional diversification is first of all a vertical diversification based on the level of the study programs. Horizontal diversification is reflected through various criteria. First of all, all types of institutions can be either public or private. In specific cases (military and police) they can be also state institutions. Some kind of horizontal diversification is the consequence of different profiles of institutions (multi-fields or one/several similar study fields focused higher education institutions), or the consequence of function of an institution in the region (local, national, international), of various research functions, etc. It is obvious that old, multi-field higher education institutions of university type focus mainly on their research function, while those smaller and usually relatively new institutions are usually closely connected with the region in which they are located.

Both in Hungary and in the Czech Republic the tertiary system of education is composed of higher education institutions described above and other educational institutions that provide study programs not leading to the higher education academic degree. Thus, a vertical diversification exists among degree programs provided by higher education institutions and vocational higher education institutions (Hungary) resp. tertiary professional schools (Czech Republic) as well as among relevant institutions. Most of these institutions in both countries collaborate closely with the industry, various employers of their graduates, regional authorities, etc. The extent and level of collaboration with the external environment differentiate them at horizontal level.

In the Czech Republic, similarly as in Hungary, the professional resp. vocational courses are often provided by tertiary institutions in collaboration with secondary schools. In Hungary, vocational courses can be offered also by colleges, i.e. by higher education institutions. It is a different situation in the Czech Republic, where the legislation makes formal difficulties for higher education institutions of non-university type to provide tertiary professional courses, which do not lead to an academic degree. In contrast to the specified

ideal situation declared in the Czech White Paper (Ministry of Education, Youth and Sports, 2001), the real situation is rather different. The transfer of credits among tertiary professional schools and higher education institutions is still very complicated and it does not facilitate enough the easy mobility of students throughout the whole tertiary sector. We can speak about the vertical diversity of the sector, which is intended to help students in finding personal proper study paths, but at the same time about the negative example (hopefully to be improved in the near future) how the diversity can prevent the students' mobility and the implementation of the Bologna ideas.

The situation in Poland is different in comparison with Hungary and the Czech Republic. In principle, all Polish higher education institutions including vocational higher education institutions, offer all levels of study programs dependently on the qualification of their teaching staff. The classification of higher education institutions is based first of all on the way of their establishment, i.e. state and non-state institutions (mostly higher education vocational schools), which reflects a horizontal diversification.

Another important classification in Poland divides the higher education institutions according to the degrees they are entitled to grant. Universities have the right to provide doctoral study programs and to award relevant degrees, while the others may provide bachelor and master study programs in accordance with qualification of their teaching staff.

The higher education institutions that possess an "extended autonomy" employ more than 60 full professors and at least half of their faculties have the right to provide doctoral programs. This is a most unique feature of the Polish higher education system which does not exist in any of other three countries.

The main difference between Slovenia and all three above mentioned countries until very recent time was the length of its degree study programs. In a way, there existed in Slovenia a three-tier studies structure, as suggested in the Bologna model, but each phase was significantly longer. The undergraduate university study programs lasted from 4.5 to 6 years, while the professional programs' duration was 3 or exceptionally 4 years. Graduate study programs required two additional years (in some professional study program just one year). Doctoral study programs leading to the degree comparable with a PhD required additional 4 years. The new Higher Education Act of 2004 brought significant changes as already indicated above including the length of each of the three cycles of higher education (Higher Education Act, 2004), and initiated the transformation of the period of study programmes in accordance with the Bologna Process goals.

Similarly as in the Czech Republic and in Hungary, vocational colleges exist in Slovenia (from 1996), compose the part of the tertiary educational sector and represent the additional step of its vertical diversification. The institutions are usually established in co-operation with the industry and they provide programs of two-year duration, leading to a professional diploma. The graduates can enter the job market, but they can also decide to pursue a second year of a professional study program in accordance with the new principle of credit transfer between tertiary vocational education and higher education approved by the act.

Horizontal diversification that offer secondary school graduates to enter an academic higher education or professional vocational education (conditioned by the type of final secondary education exam) is combined with vertical diversification enabling students to accumulate credits from different types of study programs (horizontally diversified) and to use their transfer function. It seems to be a most attractive possibility.

The extensive development of tertiary educational sectors has been the reason of the lack of properly qualified higher education teachers and their rather high age constitutes a major problem in all of the four countries.

The significant increase of higher education students and the corresponding increase of institutions, primarily those established on the basis of private initiatives, have made the problems of staffing even more complicated. The private institutions, in some cases also relatively new public higher education institutions, suffer from the lack of qualified teachers and usually try to solve the situation by hiring those employed at "older" and more experienced universities. In Poland, for instance, the "sources" for qualified personnel are the academic higher education institutions. This is an unacceptable solution. The qualified teachers' work at private/new public institutions is taken as a second job with all of its negative aspects, while the "home" institutions suffer from the lack of qualified teachers' time, which would be devoted to covering all requirements they are expected to do.

One of the problems is that the process of gaining the highest qualification and related academic titles in these countries is relatively complicated and demanding in comparison with many developed EU countries. To receive the high academic qualification (professor, associated professor) seems to be a most serious issue in the Czech Republic. The process is most complex and is based on lifelong teaching and research results. In addition, this does not guarantee a job position.

The issue of professors' shortage has been discussed loudly in Poland, while it is still echoed very quietly in the Czech Republic. In Poland, there is a considerable discussion about simplifying the academic degree structure by dropping the habilitated doctoral degree and leaving the PhD. only. However, strong opposition to this kind of change prevails with the argument that his change could reduce the academic quality of the staff (File & Goedegebuure, 2003).

Institutional Developments and Initiatives

The Bologna process, as well as many other large-scale reforms in higher education, has put many universities, some of them hundreds of years old, in a challenging position and triggered them to redefine their goals and modes of operation. The general trend in many higher education systems nowadays, as has been demonstrated above in discussing the national level reforms, is to set a unified monitoring framework that applies to the operation and overall evaluation of all higher education institutions. At the same time there is a noticeable tendency in many higher education systems to provide greater degrees of freedom to each institution to shape its own policies, both in academic and in administrative matters, in the framework of its budget.

Among leading research universities in any given higher education setting, there is an intensified effort to establish themselves today as a 'world-class university' (Altbach, 2004). Excellence in research underpins the idea of a world-class university - research that is recognized by peers and that pushes forward the frontiers of knowledge. Academic freedom and an atmosphere of intellectual excitement are also central to the operation of a world-class university. And its reputation is definitely built on the outstanding records of its faculty and the high potential of its students. Obviously, those universities that are considered as top universities are proud to differentiate themselves from lower level higher education institutions, a clear trend of vertical diversification. Altbach stresses that the world-class debate, as to according to which criteria an institution is entitled to add this prestigious title, has an important benefit in focusing the attention on academic standards and improvement, the role of universities in society, and the way academic institutions fit into national and international systems of higher education. Striving for excellence enhances competition, and competition between universities sparks improvement. Below is provided an example of a higher education institution in Switzerland that took drastic measures to redefine its structure and operation in order to establish itself as a leading research university.

The reform of the Swiss Federal Institute of Technology in Lausanne (EPFL) provides an illuminating example of a drastic transformation of a higher education institution, as a result of which it has been established as one of the most successful universities in Switzerland and Europe (European Commission, 2004). The twelve original departments of the Swiss Federal Institute of Technology in Lausanne were replaced by five schools offering interdisciplinary programs. The institute has also formed a network with other institutions, including the University of Lausanne, which now offers humanities courses to EPFL students, while EPFL, in turn, provides math and physics for students from the University of Lausanne. Convinced that all the best universities have more graduate than undergraduate students, the EPFL has doubled its number of graduate students over the last twelve years, and has also been successful in attracting excellent students and teaching staff. More than 50% of the postgraduate students are non-Swiss, while some 30% of the academic faculty originate from outside Switzerland. The EPFL operates also 'aggressive hiring policies' trying to chase best brains, and particularly trying to attract top leading professors who once lived in Switzerland and work now in first-rate research universities in the USA.

The trend of establishing itself as a 'world-class' university applies to a small number of leading research universities in a few countries. Thousands of other higher education institutions are undergoing a variety of changes in trying to establish their uniqueness and attractiveness to the relevant student clienteles. In face of overwhelming changes in the role of universities in society in the last decades, nearly all higher education institutions are concerned with a plethora of dilemmas and questions: how to cope with the 'massification' of higher education; how to diversify appropriately institutions and programs; how to set efficient quality assurance procedures that will not harm the academic freedom; how to deal with the shrinking of public funding for higher education and the need to diversify funding resources; how is it possible to balance between increased institutional autonomy combined with a growing demand for accountability; and what are the best policies for combining both excellence in research and excellence in teaching . The impact of some of the leading trends

in higher education in the last decades on the vertical and horizontal structures of higher education institutions are discussed below.

Widening Access to Higher Education

The last decades have seen an accelerated widening of access to higher education all over the world. The most drastic changes took place in the last decade in Europe and other continents. With few exceptions (like Germany and France), participation in higher education grew in almost all countries in Europe since 1995. The most spectacular increase took place in Central and Eastern Europe.

During recent years the aim at most of these states is to proceed to a universal access policy with the goal to achieve the participation of 50% of the relevant population cohort in higher education. In the Master Plan for higher education in Slovenia it has been clearly stated that: "*50% of each subsequent generation should enrol in some form of tertiary education*" (Ministry of Education, Science and Sport, 2003). Similarly such an aim is expressed in the White Paper on higher education in the Czech Republic: "*In accordance with one of the main goals of the Czech educational policy, it is necessary to enable half of the 19-yeas-olds in any year to enter some type of tertiary education by 2005*" (Ministry of Education, Youth and Sports, 2001). The student population in the Poland has increased from 789,440 in 1995 to 1,800,500 in 2002/03; in Hungary it has increased from 179,563 to 381,560; and in the Czech Republic from 191,604 to 259,280 (Statistical Offices of respective countries). There are already indications in some countries that foremost, owing to demographic trends, further increases of student enrolments are less likely in the near future in most European countries. In other words, the demand of higher education is now reaching a stage of levelling off.

The expansion of higher education has been associated with changes in the ages of students, changes in admission criteria, the flourishing of new type institutions, both private and public, etc. In most higher education systems the student population enrolled in higher education corresponds less and less to the 'classical' student age cohorts (the group of 18 to 24 years-old) (Coffield & Williamson, 1997; Scott, 1995; Sporn, 1999; Trow, 2000).

The Bologna Process has influenced already the redefinition of access policies in many European countries. Access policies, by their very nature, portray both vertical and horizontal orientations. Different access criteria to elite-type institutes versus other types, or to highly prestigious and demanded subjects of study versus less demanded disciplines, reflect clearly a hierarchical pattern of differentiation. The issue of enrolment quotas to some institutions constitutes a most interesting variable as to the vertical structure of higher education institutions. On the other hand, different requirements to enter a technical university, as compared to a comprehensive university, or various access policies to a diverse plethora of disciplines and study fields, portray a horizontal diversification.

Access policies have changed drastically in the last thirty years all over the world. Many higher education systems have moved to a mass-oriented and even a universal access policy (Trow, 2000). Graduation patterns reflect the relations between democratisation trends of access and actual study requirements and persistence. As aforementioned drop out rates in

some higher education systems are tremendously high, and are a result in some cases of a most elitist approach still predominant among academic faculty. Also the degree of mobility between different-type institutions is an important indicator in defining the flexibility of any higher education system.

The American higher education system is considered to be a most flexible one. Graduates of two-year community colleges in the USA, for instance, can enter a third year at UC Berkeley under certain circumstances, which is unthinkable in many other higher education systems. It seems that European higher education systems, under the Bologna Process, are currently moving to establishing more flexible patterns of mobility within national higher education systems and in-between national jurisdictions. Unlike the American case, language diversity constitutes an immense problem in the European context, and has to be tackled in order to enhance in-between countries mobility of students and academic faculty. It seems that the English language has been establishing itself as the lingua franca in academe all over the world in the last decade.

The widening of access to higher education is also linked to the development of many private higher education institutions. In sone of the countries of Central and Eastern Europe, which experienced enormous increases of students as mentioned above, the proportion of private institutions in the overall number of higher education institutions is remarkably high. For instance, in Poland the private institutions constitute 63% of the total number of higher education institutes; in Romania - 60%, in Hungary - 52% (UNESCO, 2003, p. 5). But a prevailing number of these private universities and colleges are small, and provide mainly high demanded subjects of study in business administration, economics and some other social science subjects. The Czech Republic can be mentioned as the specific example. The possibility to establish private higher education institutions was opened by the Act of 1998, which means that all of them are new, still in development. In spite of the high number of them (36 private public higher education institutions in comparison with 25 public and state institutions), these private higher education institutions currently (2004) constitute only less than 5% of the total number of students. The flourish of these private endeavours have changed drastically the external and internal boundaries of many higher education systems, and affected the horizontal and vertical patterns of diversity in each national milieu. Unlike the well-established leading private universities in the USA, most of the private providers in European countries, as well as in many other countries worldwide, have weak infrastructures, relatively unstable full-time academic faculty, and they do operate mainly for profit.

Nowadays, the Bologna Process aims at establishing accreditation agencies, both state agencies and self-regulatory bodies of academic institutions, in order to enhance a quality assurance culture, setting clear criteria for the evaluation of quality of higher education provided by both various new and 'old' higher education institutions. The introduction of the 'European Credit Transfer System' is viewed as the principle instrument in achieving transparency of the quality higher education programs. In this framework, there are also debated issues of accreditation of experiential life experience as part of an academic curriculum, which is well established in the USA, but an alien idea to most European academic cultures.

Changing the Research Mode

Research is perceived today not only as an essential activity of most universities, but also defines their hierarchical status in any given national higher education system. The more prestigious is a university in its research activities and outcomes, the higher its reputation and status. In many countries, universities are responsible for most of the basic and applied research, but there are also other countries, in which most prestigious research institutes operate outside the framework of the higher education systems. The CNRS in France, the Max Planck Institutes in Germany. Another situation can be seen in many Central and Eastern European countries in which Academies of Sciences played the exclusive role as research institutions before 1990, while higher education institutions were expected to preferably focus themselves on teaching activities. This situation has been both changed in various ways and preserved to some extend in all countries during the last decade. Currently, research is required to be the integral part of higher education institutions' mission, while Academies of Sciences still constitute examples of high level research institutes outside universities. Nowadays, also many international corporation and business firms operate research institutes, which are relevant to their mission and field of expertise. More and more liaisons and cooperative ventures are created between the academic world and the corporate world (Commission of European Communities, 2003; Enders, 2004; Gibbons at al., 1994; Gornitzka, 2003).

Gibbons and his colleagues had pointed already in 1994 that the research patterns are changing, and the changes are going to affect the operation of the universities and the internal structure of their traditional research institutes, and the way that they prepare their doctoral students (Gibbons at al., 1994). They labelled the traditional research as Mode 1. This type of research is grounded on a disciplinary structure, and is based on established research conventions ruled by the scientific academic communities. Gibbons and his colleagues have entitled the 'new' type of research as Mode 2. Research in Mode 2 is carried out in the context of application, is trans-disciplinary in nature and in conducted by ad hoc teams, gathered from various institutions within and outside universities, teams which dissolve when their task is completed. Members of any given team may then reassemble in different groups involving different people, around different problems and often in different loci. Gibbons and his colleagues claimed that Mode 2 will become the leading research model in most universities in the future. Indeed, the last decade has witnessed a growing tendency of enhancing trans-disciplinary research in many fields, conducted collaboratively by many institutions within and outside universities. Many of the large-scale research endeavours of the European Union define collaboration between several institutions, preferably from different countries, as a prerequisite for submitting research proposals. The issue of commercialisation is also featuring highly on the agendas of policy leaders in higher education. The trends to undertake directly applied research for the business sector, extending to the provision of scientific services is characteristic development of some European universities (European Commission, 2003). Some even claim that if universities are unable to commercialise the results of their research outcomes, it constitutes a roadblock to their future development.

The change of research mode affects greatly the research infrastructures within universities. The emergence of new study fields in science (like nano-technology, bio-technology), in social sciences and in other fields is likely to change the disciplinary structure of departments and faculties and affect both research and teaching practices. In addition, the change of research practices raises heated debates as to finding the most efficient ways as to how to prepare the future researchers.

A natural consequence of the importance attached to research and its changing patterns is a growing attention to research training and the need to restructure the doctoral studies as well as the perspectives of career development for young researchers. A number of European countries have embarked in last few years on vigorous initiatives to introduce structured doctoral studies (like in the American model), to establish new graduate schools, to define new conditions for doctoral studies, to develop post-doctoral scholarships, etc

Some initiatives taken by the most honourable Max Planck Society to establish new innovative research schools for doctoral students provide an illuminating example of how the change of research mode affects a total overhaul in the conception of how to prepare future researchers.

The Max Planck Society is a non-profit organization which operates in Germany. 95% of its expenditure is funded by the Federal Government of Germany. Its budget in 2004 was 1.33 billion Euro. The Max Planck Society maintains today 78 institutes, research centers and laboratories, employing approximately 12,300 scientists and scholars. In addition it employs also thousands of doctoral candidates, post-doctoral fellows from Germany and abroad. Acknowledging the meaningful changes in the way research is conducted today, the Max Planck Society has launched in 1999 a new ambitious program for educating the junior scientists who are to become the scientists of the future. In collaboration with universities, research centers and other research organizations, in Germany and outside Germany, it has established so far 29 International Max Planck Research Schools (IMPRS) in innovative and inter-disciplinary research areas, such as molecular biology, neurosciences, demography, law, plasma physics, etc., involving thirty four Max Planck Institutes and dozens of universities, libraries and other research institutions. The partners participate in the funding of the schools from their own operating budget (Max Planck Society, 2004).

The IMPRS are geared to graduate students who are studying towards their PhD. One of the major features of these new research schools is that they focus mainly on international cooperation, and are based on the principle that foreign students account for at least 50% of the graduate students in any given school. In addition, the doctoral studies are structured, as in the American model, and based on collaboration between students focusing their research in different fields. The schools provide a first-class, inter-disciplinary education, develop scholarly links between the young scientists and their mentors and advisors and enhance inter- and trans-disciplinary research works. These schools familiarize the graduate students with research facilities in Germany, in order to enhance in the future cooperative activities with international scientists with German research institutes. The participating students might choose between doing their PhD exam at a German University or at another university in the homeland.

A scientific commission comprised of the Max Planck Society and the participating universities and institutions has been set to monitor this innovative endeavour. It was decided that the Research Schools will run for six years, and after being evaluated it will be decided whether the Schools' operation will be extended to another six years. More international schools are planned in the next few years. The IMPRS constitute a sharp departure from the doctoral studies in Germany. If this project will succeed, it is likely to have an impact on restructuring the overall doctoral studies in Germany, as well as in many other countries which are based on the German Humboltdian model of a research university. Such a transformation might have an enormous impact on changing the hierarchical status of many research universities, and affect their reputation within their national jurisdiction and in the international domain. Such a process of differentiation between high level research universities and other universities in already underway in Germany. The Minister of Education and Research of Federal Germany, Mrs. Edelgard Buhlman, has declared in March 2004, her intent to identify five to six top research universities, that will be comparable to leading research universities, like Harvard and Stanford in the USA. The terms for the preliminary competition were published recently, and the intent is to identify a short list of ten universities by the end of 2006. The number will be winnowed to four or five or six winners in the second round. Each of these universities will be supplemented with an extra of $60 million annually. Such a move constitutes a drastic and dramatic shift in the German academic culture. It will definitely affect many other European countries.

Funding and Government-Higher Education Relations

As aforementioned, government-higher education relations are in a continuous process of change in almost all higher education systems worldwide (Huisman et al., 2001). Funding constitutes a major problem. The redistribution of the funding of higher education from the public to the private sector reflects the convergence toward a mixed funding system and the transformation of public modes of intervention in higher education. The growing cuts of higher education budgeting through governments all over the world, and the encouragement of entrepreneurial operation by universities to mobilize funds for their operating budgets, affect greatly the operation of universities and their status in any given higher education system.

The generous donations and grants of the private and corporate world to many prestigious universities in the USA are most exceptional. Most higher education systems all over the world are funded mainly by the governments. The notion of entrepreneurial universities started to be influential in Europe by the end of the 1990s as many higher education institutions attempted to be both highly innovative with the respect of their internal management and organization of studies, and strongly involved in programs of cooperation with industry and the wider world of work. This development is very much related to the broadening of access to higher education. The unprecedented expansion of student populations has challenged traditional funding modes. Confronted with the decline in revenue of social expenditure, many countries, at very different levels of development, tried to restrain

the expansion of the public funding of education in general, and higher education in particular. Nowadays, higher education institutions are expected to do more for less.

The cost per student related to the GDP per capita in most developed countries decreased. Between 1995 and 1998, only Italy and Greece, among the OECD countries, witnessed an increase in the expense per student that was greater than the revenue per capita (Chevaillier & Eicher, 2002). Private expenditure for higher education increased in seventeen OECD countries, sometime a great deal, as in Turkey and Italy.

An increase of private resources for higher education can be achieved through the establishment or expansion of private institutions that are partially or entirely financed from contributions by students and their families, as well as by the mobilization of new resources by the public sector, among which user contributions play a prominent role.

Today, higher education funding became increasingly based on mixed sources with students being required to pay a greater share of costs of their education. In most countries tuition fees were introduced where they did not exist before and increased where they already existed. Institutions were forced, by the stagnation or decrease of public funding, to identify new resources or to develop resources neglected up till then.

Until the 1980s a clear distinction was made between countries in which higher education institutions charged substantial tuition fees and those that applied the principle of free tuition higher education. In Central and Northern Europe, the only contributions asked of students were contributions of a social or administrative nature (enrolment fees, examination fees, sports and union dues) or for specific services other than educational services. In these countries, the question of tuition fees mostly stopped being taboo, and a public debate opened. Tuition fees have been introduced or greatly increased in a majority of Euroepan countries, particularly Spain, the Netherlands, and Ireland in the 1980s, Portugal, Italy, the Untied Kingdom in the 1990s, Austria in the 1990s, not to mention the Central and Eastern European countries, in which they were introduced mostly everywhere. Outside Europe, the general tendency is to raise these fees, particularly in Latin America and India. Changes of regime have brought with them the introduction of tuition fees, as in the case of China (ibid).

In some countries a policy of selective tuition fees has been adapted for different student categories. For instance, in some German Länder, students who remain enrolled in a university beyond the average length of studies, must pay a fee of 500 Euro per semester. There are several categories of students that are required to pay a full tuition, like foreign students. The majority of countries in Central and Eastern Europe have a mixed system in which the government offers a number of state-financed places in public higher education institutions to the best students whereas other students have to pay tuition fees. Exceptionally, as in the Czech Republic, students are asked only for a contribution for specific services similarly like in Northern Europe (payments for entrance examinations, studies in foreign languages) and for studies beyond the standard length, like in some German Länder mentioned above. At the same time, private higher education institutions whose existence depends on tuition revenues are also charging tuition fees (UNESCO, 2003). The Australian universities are permitted to enrol foreign students beyond the number of places financed by the Government by charging them a full tuition. In many countries, various schemes of grants and student loans are finding their place concurrently with increasing tuitions.

The sale of services, whether or not they are directly bound to the educational activity of the institution, increasingly represents part of the resources of higher education. For the North American universities, it represents about 20% of their resources, irrespective of whether the institutions are private or public ones. More and more universities exhibit signs of entrepreneurial spirit (Clark, 1998) that is encouraging them to vary their funding sources and therefore reduce their dependence on the government. They have created new entities that are intended to act as interfaces with the economic and social environment. These entities are professionally managed, according to a commercial logic similar to that of corporations with which they are in contact. They are charged with the marketing of research results, and of translating the technological or experimental activities into practical applications. This activity that generates supplementary financial resources, also fuels the teaching and research sectors related to the traditional missions of these institutions.

Universities obtain also supplementary resources through the export of education programs. Notwithstanding the enrolment of foreign students, many American, British and Australian universities are opening branches in Asian, Central and Eastern European countries, as well as some other countries that offer programs that are in great demand. Other sources are based on income from patrimony, grants and donations.

In many Asian and Latin American countries private education emerged, particularly in low-cost and high-demand education sectors. In some countries, mainly in the USA and some European countries, private higher education is well established and competes in terms of quality with public higher education, but in many other countries private higher education operates mainly for profit and it frequently criticized for providing poor quality education.

While there is a wide recognition that higher education institutions must accept the reality of competition for scarce public resources in the present day socio-economic reality in which higher education functions, there is also a voiced concern that open and overt deregulation of higher education will give rise to retreat from the social agenda of the democratization of access to higher education. This concern is also argued in the context of seeing higher education as a 'tradeable' service. Perceiving higher education as either a 'public good' or as a 'tradeable good' constitutes today a heated and controversial topic in many higher education systems, and will affect in the future the status of many higher education institutions in any given system. Seeing higher education as a 'public good' is a particularly important consideration if higher education is required to meet the challenge of proving a mass quality higher education at all levels of the higher education system, from the top elite research universities to community colleges and professional tertiary-level institutions.

The Impact of the Information and Communication Technologies

Higher education systems all over the world are challenged nowadays by the new information and communication technologies. These technologies have had a huge impact on the world economy, corporate management and globalization trends, and they bear a tremendous potential to reshape the nature of study environments everywhere, of both conventional and distance teaching institutions. The impact of the new technologies on higher education environments is likely to grow in the future, and will affect all domains of academic activity - research, teaching and learning, organization, finance and government policy. The digital technologies enhanced also the establishment of totally new virtual universities, and pushed forward the creation of consortia between universities and other partners from outside the academic world, as well as convinced many campus universities to mobilize them for a wide spectrum of uses for both providing distance education and for their students at campus. As such the new digital technologies have contributed to the diversification of many higher education systems (Carneavale, 2004; Guri-Rosenblit, 1999, 2001).

E-learning will greatly contribute to growing flexibility in academic study patterns (Bates 2001; Collis & Moonen 2001; Collis & van der Wende 2002). Flexible learning offers students many opportunities to adjust their interests, needs and learning styles to a variety of learning settings and media combinations. Hybrid courses, combining various components of face-to-face encounters with online provision will emerge as a growing pattern in academic institutions. However, online teaching as a stand-alone pedagogy will be used to a very limited extent, and most e-learning will be employed for add-on functions in teaching/learning processes; (Bates, 2001; Carneavale, 2004). The majority of students attending campus universities will prefer to attend classes, or will choose to distribute their college experience among residential campuses, commuter colleges and online courses. More graduate or postgraduate students will study online, whereas the majority of undergraduates will prefer the more conventional face-to-face encounters.

E-learning will promote the growth of both academic trade and academic philanthropy. More universities and new for-profit companies will export academic and professional programs as a commodity to a variety of student populations. There are already some noticeable differences among national policies in this domain. Australia, the UK and Canada are more oriented to the international market (Ryan 2002). Many of their universities try to export their higher education as a commodity to third world countries. American universities are more directed inwards, generally preferring campus-based integration of digital technologies, with a few examples of purchases and partnerships in physical campuses overseas. In many European countries the new technologies play an important role. They are used to open a broad space for collaboration among the EU and other European countries in various programs such as SOCRATES.

Concurrently with the growing use of e-learning for profit and commercial purposes, academic philanthropy through the utilization of the new technologies' capabilities will grow as well. The 'MIT's Open Courseware Project' constitutes an excellent example in this domain (Olsen, 2002; Vest, 2001). It demonstrates how a leading private university can practice intellectual philanthropy in the world of academic teaching. Higher education institutions all

over the world will be able to adapt content and ideas from the MIT courses for their benefit. Also Carnegie Mellon and Princeton universities are currently involved in experiments to make course materials public on the Web (Olsen, 2002). The Open Knowledge Initiative constitutes an additional example of academic generosity. This is a collaborative effort led by MIT, Stanford University with six other institutions of developing free and open technical specifications of learning management systems and related infrastructures (ibid).

E-learning exerts global outreach. In an international market, students are able, and will be more so in the future, to approach any university where access policy encourages and extends to international students. This will be particularly true in professional training and postgraduate fields. The outreach of universities to international student clienteles on a global level could be activated at different levels, ranging from enrolling individual students from different countries, through collaborative ventures with other institutions (universities or business enterprises), to cooperative undertakings with governments, international corporations and intergovernmental organizations. The involvement of such central bodies is essential for the systematic implementation of the new technologies into higher education systems efficiently and on a large scale. Global outreach by its very nature increases mobility and contributes to the decrease of diversity between same -type institutions in different countries.

Globalization, Accreditation, Quality Assurance and Transnational Patterns

'Internationalization' and 'globalization' are new buzz words in higher education and practice. These two terms draw attention to the undeniable fact that boundaries of what were relatively closed national systems are increasingly being challenged by common international trends (Enders & Fulton 2002; Guillen, 2001). Universities are at present engaged in becoming partners in inter-institutional schemes and pushing forward in the drive towards globalization. Students, academic staff and curricula are transferred and exchanged between institutions; accreditation agencies ensure promptness in accrediting previous experiential learning and previous academic studies; governments append their signatures to cooperative projects in higher education. Strengthening agreements between academic institutions within a particular country and across national borders will be central to the mobility of adult students.

Students are treated more and more as consumers or customers, and universities are forced to market themselves for both national and international clienteles – a trend that encourages both horizontal (elite versus less prestigious institutions) and vertical diversity (different type institutions tailored for different types of student clienteles).

Quality assurance is of prime concern in higher education systems. While the tradition of accreditation is well based in the USA and Canada, until lately there has not been such a tradition in most European countries (UNESCO, 2003). A different situation could be found in a number of Central and Eastern European countries. In the last decade, these countries have established accreditation agencies in the context of systematic changes of their higher education systems, concerning in particular the rapid development of private higher education establishments.

Nowadays, the move towards the introduction of the accreditation process in higher education in the context of the Bologna Process can be observed all over Europe. The building up of mutual trust among universities is a most important aspect, as quality assurance is the first priority of the European Higher Education Area. One of the basic challenges in Europe today is the need to develop mutually shared criteria and methodologies on quality assurance combined with the will to safeguard diversity of European higher education systems as well as the institutional autonomy closely connected with its accountability (Ministers responsible for higher education, 2003).

All countries have some kind of quality assurance mechanisms, but they vary greatly in terms of purpose, focus, and organization (Middlehurst, 2001; Schwartz & Westerheijden, 2004; Vlasceanu et al., 2004). Within the framework of the Bologna Process, the vital aspect of defining quality assurance procedures for enabling recognition and accreditation of studies in variety of higher education institutions has been recognized by all the participating countries.

The main co-ordinator and facilitator of the development in the field of quality assurance should be the European Network for Quality Assurance (ENQA), taking into consideration the results and expertise of other quality assurance associations and networks

being established at the European level. Among them, there are for example: Joint Quality Initiative, established in 2001 with the aim to contribute to the understanding and transparency of two cycles of higher education, European Consortium for Accreditation, established in 2003 with the main goal to find a way of mutual recognition of accreditation decisions on bilateral and multilateral levels and others (Ministers responsible for higher education, 2003; Munsterova, Sebkova, 2003).

The requirement that ENQA should, through its members, co-operate with the European University Association (EUA), the European Association of Institutions in Higher Education (EURASHE), and the National Unions of Students in Europe (ESIB) resulted in the establishment of the co-called Quadripartite Group, which will be presented in its final form to the Bologna Follow-Up Group in February 2005 (ENQA, 2004).

Quality assurance and accreditation have a strong impact on the international recognition of academic qualifications. In Europe, a pan-European network of national information and recognition centers (ENIC/NARIC Network) are expected to ensure close links with quality assurance agencies at national and international levels; an example of such a linkage is the co-operation with ENQA (Campbell, Rozsnyai, 2002).

The *'Erasmus Mundus'* program is one such initiative aimed at reinforcing mutual trust. Students must study at two European universities in order to receive a European Masters degree, but only universities cooperating with others can participate, and therefore receive European Union's funding. The hope is to create islands of cooperation that will grow in the future (European Commission, 2004).

It seems that the globalization trends are likely to reduce diversity and encourage more homogeneous and balanced higher education systems in any given national setting, due to the need to enhance greater mobility of students, curricula and academic faculty in-between national jurisdictions. Such trends are likely to bring to a greater homogeneity of study programs, accreditation procedures, and cooperation in research projects. Transnational education is a potent manifestation of the impact of globalization upon higher education, and is potentially the most significant one.

In the context of the Bologna Process in Europe, the idea of transnational education affects every important aspect of higher education, such as: national control over the higher education system, institutional autonomy of each higher education institution, lifelong learning, recognition and quality matters, funding of research projects. Currently, transnational education is regarded as both a threat and as a benefit by different national higher education systems (Altbach & Teichler, 2001; Barblan, 2002; Curry & Newman, 1998; Enders, 2004; Enders & Fulton, 2002; Guillen, 2001; Huisman et al., 2001; Scott, 1998; van der Wende, 2001, 2002). The transnational phenomenon can be manifested in various organizational forms, such as franchising, branch campuses, joint programs, corporate universities, various international institutions, and various forms of distance teaching and virtual universities (Guri-Rosenblit, 2001; UNESCO, 2003).

The positive aspects of transnational education include: widening of learning opportunities at various higher education levels by providing more choice for citizens in any given national jurisdictions; challenging traditional education systems by introducing more competition and innovative programs and delivery methods; helping make higher education

more competitive; assisting in diversifying the budgeting of higher education; and benefiting through links with prestigious institutions, mainly in developing countries. For instance, several prestigious American universities are operating currently in Qatar through the funding of the 'Qatar Foundation for Education, Science and Community Development', a non-profit organization founded in 1995 by the Emir of Qatar (Mangan, 2004). Cornell University opened there a branch of its medical school; Texas A&M University operates an engineering program; Virginia Commonwealth University operates a program in design arts; and Carnegie Mellon University is planned to open in 2005 undergraduate studies in computer science and business. These respected universities provide high-level higher education studies in their field of expertise.

The initiation of a new research center near the Dead Sea constitutes an additional example of the potential merits of transnational education. Cornell and Stanford University have planned to develop one of the Middle East's most advanced scientific research institutes at the invitation of the 'Bridging the Rift Foundation', a private non-profit organization (Castillo, 2004). This organization which undertook the mission of building an effective bridge between people in conflict areas by demonstrating the benefits of collaborative programs involving economic development, cutting end research and advanced educational opportunities. The center will focus on life sciences, and its primary will be a project called the 'Library of Life', which will establish a catalog of all of the world's DNA research, and the initial phase will start in the Dead Sea area. Beginning in September 2004, Cornell and Stanford Universities offer four to six PhD fellowships to Israeli and Jordanian students. When the Center is fully operational, each of these universities will expand its fellowship program to approximately twenty fellowships. Doctoral students will do their course work in the USA and then carry out fieldwork at the Center before returning to one of the two universities to finish writing and defend their dissertations. Such an operation serves both academic and political goals.

However, there are also negative aspects of transnational education. Currently many unregulated providers of higher education operate for-profit in many countries. They are not subject to external or internal audit/monitoring processes, and their operation remains outside official national quality assurance regimes. Many of these institutions constitute 'degree mills' that provide low level education. Furthermore, some claim that there is unfair advantage enjoyed by some transnational providers in comparison to the strictly regulated national providers, that might affect lose of income of the latter. Unquestionably, the intricacy of relationships between different-type transnational providers, delivery methods and programs, creates a highly complicated situation, which affects greatly the horizontal and vertical patterns of higher education structures at the national and international levels.

It is most likely that transnational education will grow in the future, and it will accelerate competition between various-type higher education providers. At the same time, much greater attention will be devoted by national higher education authorities and international organizations to monitoring and defining appropriate quality assurance regulations to ensure the quality of the higher education provided by transnational providers, as well as secure and preserve traditional values of higher education.

Concluding Remarks

This paper purported to give a synthetic overview of the main trends that have taken shape in the course of the last decades in various higher education systems all over the world, and have affected the horizontal and vertical structures of higher education systems. Higher education today is faced with a period of profound transformations enhanced by economic, social, technological and cultural changes in society at large.

Some of the changes are taking place at an international or continental level. The changes in the higher education of European countries in the last decade are most remarkable. The sudden need for a complete overhaul of the higher education systems in Central and Eastern Europe after 1989 have mobilized all European countries to start serious policy debates about the need for an overhaul of higher education in Europe. It was realized that the time was ripe for a large-scale initiative to achieve more convergence in European higher education. The Bologna Process which involves now governments, higher education institutions, students, and international organizations has turned out to be the most effective lever for change that Europe has so far known in higher education for centuries.

Some profound changes do affect all higher education systems all over the world due to the widening of access to higher education, the change of higher education funding, the formation of new and innovative research modes, the emergence of the digital information and communication technologies, and the inter-connectedness of the world in the framework of a 'global village'. All of these phenomena affect various aspects of the traditional roles of higher education at international, national and institutional levels. Moreover, traditional higher education institutions, even the most prestigious ones, cannot ignore the challenges posed by ongoing economic, social and political developments, as well as the emergence of new types of higher education provision, such as corporate universities and those organized as virtual universities. They are forced to react and be attentive to the changes in forming their policies.

The last decade witnessed a continuation of the trend of providing more autonomy, especially in financial matters, for higher education institutions coupled with a demand for increased accountability. The prevailing reality of higher education is that it has to compete for public financial support against a wide range of other areas covered by public/government budgets. An emerging trend in many countries is the moving of many higher education systems to charging tuition fees combined with a system of appropriate cost recovery and providing support systems. More and more universities have become entrepreneurial in their search for diverse budgeting sources.

Paradoxically, both trends of growing competition between higher education institutes and growing collaboration are likely to occur in the future, and affect both research and teaching in the academic world. Universities will compete with each other for getting funds, better students, mobilization of academic faculty, academic ranking by evaluators, etc. But at the same time they will also collaborate both in research and teaching for the benefit of all actors. Many international bodies encourage, and even condition funding of research projects

by forcing collaboration between several higher education institutions, preferably from different countries.

Higher education will become even more diverse in the future through the establishment of new higher education providers and the creation of various consortia and partnerships between universities for research an/or teaching purposes. At the same time, mobility of students across countries will decrease horizontal diversity between many national higher education systems, particularly in Europe. Quality assurance mechanisms, the definition of clear 'academic currencies' and diploma supplements will provide a more homogeneous and articulated degree system which will enable to compare easily diverse degree requirements and structures. Also research patters will merge between different countries, and greater collaboration will take place in preparing doctoral students and in conducting collaborative research projects.

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4. The structure of the higher education system and the role of research

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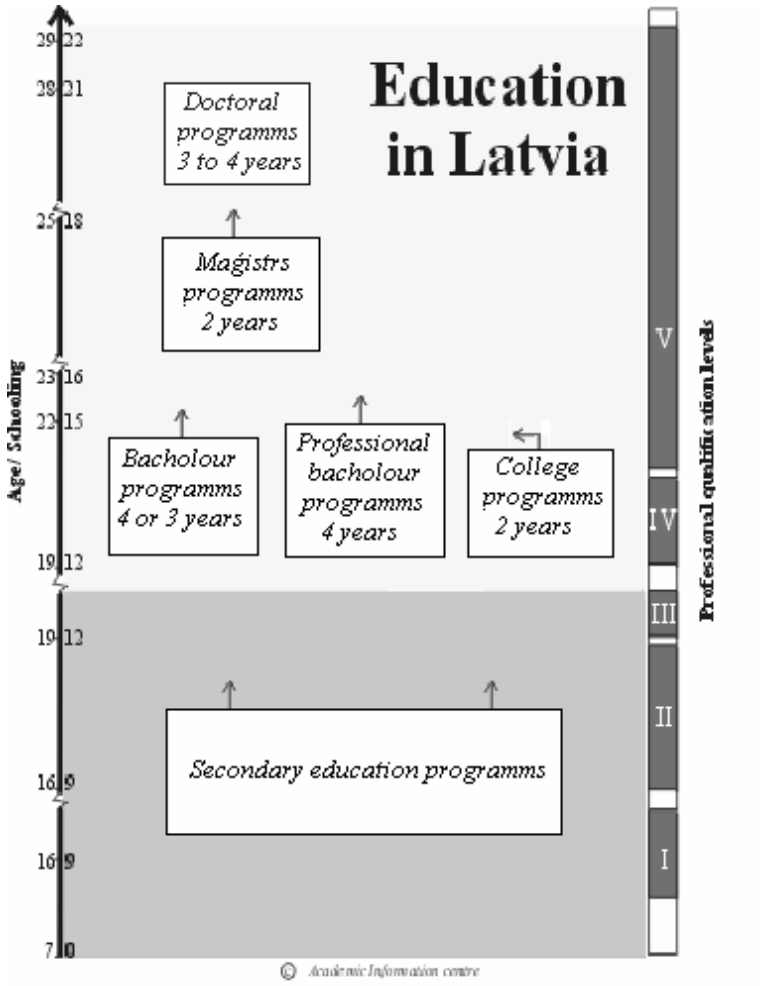
The present paper deals with structural changes of Latvia higher education and research development in the years of independence. The relevance of concept and reality criteria of horizontal and vertical diversity, vertical stratification and changes of higher education in Latvia on its way to knowledge, based society has been analyzed.

Co-ordinates of the structure of higher education systems



Higher education in Latvia is obtained in a higher education establishment – an institution of higher education and science, implementing academic and professional study programmes and working in the field of science, research and artistic creation. Colleges provide the first level of higher professional education. Colleges may function as colleges established under higher educational establishments, or as independent institutions.

The aim of academic education is to ensure the acquisition of theoretical knowledge and skills of research as a preparation for independent studies in a selected scientific branch or sub-branch. Academic education studies terminate with final examinations, with a Bachelor's or Master's thesis being an integral part. After successfully mastering the academic studies programme, the student is awarded a Bachelor's or Master's degree.

Professional higher education is education rooted in applied science and arts, ensuring the opportunity to prepare for a professional career. The content and scope of professional higher education is prescribed by the State First Level Professional Higher Education Standard and the State Second Level Professional Higher Education Standard (from which a student may obtain a Bachelor's or a Master's degree, and the respective professional qualification). Professional higher education studies terminate with state examinations.

The perennial instability and structure change

The national policy and strategy of higher education implemented in the last seven years is based mainly on the assumption that Latvia is in the transition phase from a centralized economy to a market economy, with a strong commitment by the state to join the European Union. Radical changes that have taken place in state politics, economy and culture have created a completely different environment and preconditions for the development of higher education. On the other hand, higher education in favourable circumstances can also serve as one of the key driving forces of change.

Adoption of the Law of Higher Education Institutions in 1995 (with amendments in 2001 and 2004 and open for further amendments later) and a three-year implementation period marked the end of a very significant phase in the development of higher education institutions in Latvia. The phase may be described in terms of dynamic changes inside the system of higher education, and an essential transformation of the system as such. During this period, the higher education system dismantled the Soviet-inherited features, principles and positions, and became reoriented towards a Western-type higher education system, which is based on a wide autonomy of higher education establishments, but is, nevertheless, linked with a responsibility of these institutions to the state and society. The most important accomplishments during this period were: (a) the establishment of numerous new higher education institutions, including regional higher education institutions; (b) the creation of the private higher education institution sector; (c) the introduction of a quality assessment system of higher education; (d) the upgrading of study programmes and development of new programmes; (e) a speedy growth in the number of students, and considerable changes in the

structure of students; and (f) extension of international co-operation among higher education institutions.

It could be said that as a result of these transformations (in accordance with the Bologna Declaration), Latvia has managed to create a higher education system that corresponds to the principles of a democratic state and the new economic situation. However, any accomplishment or achievement generates new tasks and objectives. For example, the University of Latvia has taken a decision to use the education 3+2 model. This means that there are three years of Bachelor studies and two years of Master studies; previously, it was a 3/4+2/1 model. The study programmes in each study level are developed to prepare the graduates for the labour market. This transition will be gradual. At the moment, doctoral studies last three years; in the future, it is planned to increase this to four years.

Besides the Bologna Declaration, there are other international documents, programmes and conventions that are applicable to higher education in Latvia: (a) Lisbon Convention; (b) Sorbonne Declaration; (c) Salamanca Convention; (d) Prague Communiqué; (e) Berlin Ministers' Communiqué; and (f) Declaration on Co-operation in the Area of Quality Assurance of Higher Education in Baltic States.

The purpose of the study: analysis of concepts and realities

In 1998, the Cabinet of Ministers, in view of changes and the new situation, adopted the National Concept on Higher Education and Development of Higher Education Institutions. The basis of the concept is the higher education strategy and higher education institutions development up to 2010. This concept was elaborated by the Council of Higher Education of Latvia, and accepted in the Cabinet of the Minister for Knowledge. Key indicators identified in the concept are: (a) raising of competitiveness of higher education; (b) introduction of the normative financing system; (c) increase in the role of universities in the development of science in Latvia; (d) introduction of the crediting system of students; (e) development of academic and research staff; (f) development of professional study programmes with particular emphasis on the development of medium- and short-term programmes; and (g) promotion of international co-operation.

The Higher Education Development Program 2002–2010 was worked out in 2001, in line with the concept. Strategic tasks of the development of higher education identified by the concept are further detailed in the programme, with fixed deadlines and relevant funding.

The programme emphasizes the importance of the introduction of the principles of the Bologna Declaration in Latvia's higher education system – to create a system of education that is comparable to and harmonized with a common European education area, and corresponds to the established quality criteria and requirements of the European market.

The concept and the programme are key documents defining the development strategy of higher education in Latvia until 2010.

Other documents that determine the implementation of the higher education system in Latvia are: (a) concept of development of education for 2002–2005 (approved by the Parliament of Latvia – *Saeima*); (b) regulations issued by the Cabinet of Ministers; (c) reform

of universities (not realized because of financial problems); and (d) concept of the development of regional higher education institutions.

Criteria of horizontal diversity

In 2004, there were thirty-three institutions of higher education in Latvia, including five universities, fifteen national non-university types of institution of higher education, and thirteen private non-university types of institution of higher education.

Analysis shows that there is a large diversity of institutions of higher education in Latvia, expressed according to various criteria of horizontal distribution. Most of the institutions of higher education are characterized by a specific profile (e.g. Latvia University of Agriculture, Riga Technical University, Police Academia of Latvia, Stockholm School of Economics in Riga, Latvian Evangelic Lutheran Christian Academy, etc. [http://www.aiknc.lv/en/list.php]).

Both national and private institutions of higher education operate successfully in Latvia. One of the most important issues in the strategy of higher education is the development of regional higher education institutions, as laid out in the elaborated concept of the development of regional institutions in Latvia.

It is not possible to recognize specific interdisciplinary universities in the higher education system of Latvia, as the development of any branch can only be realized in context with the development of other related branches.

Criteria of vertical diversity

The beginnings of the higher education quality assessment system date back to 1994, when the Ministers of Education of the three Baltic countries signed a Declaration on Co-operation in the area of quality assurance of higher education in the Baltic States. To implement the requirement of the declaration, the Quality Assessment Centre for Higher Education was established in 1994 with the aim of organizing the quality assessment process, and co-ordinate the accreditation of programmes and higher education institution establishments. The final decision and quality assessment on accreditation of higher education institutions are made by the Council of Higher Education of Latvia. The higher education quality assessment system was introduced in 1996, when the first assessment and accreditation of a study programme and a higher education institution (Stockholm School of Economics in Riga) were made. Accreditation of higher education establishments means, in practice, the inspection of work organization and the quality or resources of the establishment. A positive outcome of this inspection is one of the main preconditions to ensure that the education establishments have the right to issue education diplomas that are recognized in the state.

Expansion of international co-operation is one of the issues of further development of education in Latvia, learning from the experience of Western higher education establishments, the creation of a system of higher education that is based on principles of democracy. The establishment of several higher education establishments – such as the Stockholm School of Economics in Riga, Vidzeme College of Higher Education, Ventspils College of Higher Education, Riga Graduate School of Law, with the direct assistance and participation of several Western countries – served as an important impetus for the development of international contacts. The successful work of these establishments, the high prestige of the institution among applicants and the demand of graduates in the labour market testify to the usefulness and necessity of such collaboration on the way to accession to the European Union. International contacts exist in all higher education establishments of Latvia, including institutions founded by legal entities. International co-operation is carried out in different fields and areas, the most important of which are: (a) participation in joint international projects; (b) conclusion of co-operation agreements; (c) development and implementation of study programmes and courses; (d) exchange of students and staff (including the invitation of guest lecturers to work in Latvia's education establishments, study visits of academic staff to higher education institutions abroad, temporary studies of students or continuing more advanced level education in higher education institutions abroad, student exchange programs in higher education institutions abroad and foreign students' studies in higher education establishments in Latvia); (e) foreign assistance in the development area of a technical base of establishments and structural perfection; (f) international conferences, workshops and other activities.

Many higher education institutions have established special structural units for international co-operation with the task of co-ordinating, promoting and ensuring information exchange in the area of international co-operation. The University of Latvia has signed forty-four co-operation agreements with foreign universities, is implementing ten TEMPUS projects, and is working on several other international projects; 409 students of the university study in foreign universities, with 7,020 foreign students studying at the University of Latvia. Higher education establishments and their branch networks are spread over the different Latvia regions – Latgale, Vidzeme, Zemgale and Kurzeme. Each of them has a regional higher education institution and branches of other higher education establishment throughout the region. Regional higher education institutions are important as culture and education centres in the regions, because the majority of universities in Latvia are concentrated in the capital.

There are also some leading higher education institutions of excellence. A particular example is the Stockholm School of Economics in Riga. It was founded on an agreement between the governments of Sweden and Latvia, and is financed from the budgets of both states. The other higher education institution of excellence is the Riga Graduate School of Law (RGSL). The idea of establishing the RGSL had already been conceived when the Stockholm School of Economics in Riga began its activities in 1993. The model that the RGSL founders chose to develop was a postgraduate programme that would offer to those students who had acquired the basics of law, the opportunity to supplement their knowledge with a Master's Programme in International and European Law.

Measures of diversity with respect to teaching/learning/students

Pursuant to the Law on Higher Education Establishments, Latvia has a binary system of higher education establishments, with a distinction between the university and non-university type of higher education institutions. However, in practice, this system is not fully implemented; therefore, differences between these two types are not clearly defined. It is true to say that Latvia has preserved the suggestions for Latvian higher education, where both university and non-university type education establishments offer both academic and professional programmes.

University type higher education establishments carry out programmes and research in the main fields of science or arts; these correspond to the profile of the establishment. Results of research are published in internationally recognized journals or other publications. There are promotion councils working in the leading fields of research degrees; the university establishes (or incorporates in its structure) research institutions engaged in internationally recognized scientific studies, and participating in the implementation of study programmes, international research projects, forums and conferences. The university publishes scientific works.

Non-university type higher education establishments offer professionally orientated programmes and carry out applied research work.

One of the most important tasks of universities is to train academic staff for the whole network of higher education institutions in Latvia, offering full-time and part-time doctoral studies in the science fields required by the state.

Student dropout depends on several factors: (a) the student's ability to sustain intensive studies during a period of several years; (b) the student's financial situation; and (c) the selection criteria for enrolment in higher education institutions.

Dropout in full-time studies in Latvian higher education institutions from enrolled students in 2002/2003 was 39.4 per cent; in part-time studies, 49.3 per cent. The highest dropout can be observed among Ph.D. students. The reason for this could be the lack of motivation in continuing studies, low salaries for academic staff, etc.

Vertical stratification with respect to the teaching function of higher education

The dominant academic specialization in most of the higher education institutions does not reflect the state's real needs and abilities – the state is not able to provide workplaces in the national economy for all specific specializations. The prestige of higher professional education is relatively low. The universities' tendency to unite professional and academic studies tends to increase demands for preparing a specialist, and extends the length of studies.

Vertical stratification with respect to the research function of higher education

As a consequence of Soviet research policy, the majority of research institutions were separated from the higher education system. In Latvia, there were thirty-three specialized research institutes that worked in isolation from institutions of higher education. This isolation did not augur well for the development of strong links between research and higher education.

One of the major tasks of the research policy over the past six years has been to eliminate this isolationism, and for this reason the Ministry of Education and Science is now realizing the integration and incorporation of individual state research institutes and their staff into universities with the primary aim of modernizing and strengthening the research capacity of these universities.

This programme of integration and incorporation has been in existence since 1997 and aspects of this integration include: (a) participation of institutes at all levels of higher education; (b) the competitive appointment of academic personnel; (c) the re-structuring of faculties; and (d) the reassessment of accreditation criteria for study programmes.

At the moment, the majority of state research institutes have transformed their legal status, and are now formally incorporated into the universities. Fully functional integration is still a matter of time, and subject to financial and managerial stimuli.

Concepts explaining the structure of higher education with respect to its teaching function

In the context of accession to the European Union, Latvia's national science and technology policy is aimed at reorienting its research potential towards national and European priorities, and to stimulate more active involvement of researchers in solving economic, cultural and social problems. The thirty-three formerly isolated research institutes have now been formally attached to universities. National research priorities have been established through a resolution of the Cabinet of Ministers, and are as follows: organic chemistry; biomedicine and pharmacy; material sciences; information technology; forestry and wood sciences, and Lettonica (Latvian history and archaeology; Latvian language, literature, folklore, and ethnography; Latvian art and culture; philosophy and sociology).

A national concept on R&D was adopted by the Latvian Council of Science and approved by the Council of Ministers in July 1998. It corroborates the national research priorities and identifies additional priorities in relation to Latvia's co-operation with the EU: information technology and telematics; life sciences and biotechnology – biomedicine, drug construction and biotechnology; new materials; ecology and environmental protection; energy technologies; forestry and agriculture research; social and economic research. It also proposes the establishment of national research programmes and centres of excellence. In addition, it lays out the following criteria for R&D funding: competitive funding of research projects reviewed by peers; public funding of a limited number of national research programmes in

priority areas, selected with the participation of scientists, officials and the business community; funding of scientific infrastructure at state research centres; funding of centres of excellence that are internationally competitive. Latvian scientists and researchers were actively involved in the EU Fifth Research Framework Programme (in fact, twenty-three Latvian projects were accepted for this programme) and are now looking forward to a similar participation in the Sixth Framework Programme.

The impact of new steering and evaluation modes on the structure of higher education

The quantitative targets for higher education development (up to 2010) are given in the table.

Table: Quantitative indicators to be attained by 2010

Human resources:	
• Student Number	120.000
• Number of Ph.D. students	4.500
• Number of professors	1.000
• Number of Doctors of Sciences (Ph.D.) doing research	5.000
• Number of people engaged in research	2.000
Financial resources:	
• State budget subsidy to higher education	1.4% of GDP
• State budget subsidy to science and research,	1.0% of GDP
of which for research at universities	0.4% of GDP
• Private funds raised to support	1.0 - 1.3% of GDP
• Private funds raised to support higher education	1.0 – 1.4% of GDP
Infrastructure:	
• Newly built science and Technology Park associated to universities	
• Upgrading and optimization of the infrastructure of the institutions of higher education and research institutes	
Outcome indicators:	
• Number of specialists to be trained	30.000
• Number of Ph.D. to be trained	700
• Number of SCI publications	1.000
• State export share of high technologies output	20 – 25%

Source: Ministry of Education and Science, 2002

To bring higher education (HE) in line with these expectations, policies will have to determine the system's weaker parts; which mechanisms are not working effectively; how to implement corrective strategies; and also to agree on a new set of instruments for HE reform.

According to existing studies and surveys, available data and results of the interviews conducted for this report, six major problem- and challenge-areas can be identified for Latvia's HE: (a) relevance of HE for national development; (b) quality of teaching; (c) institutional organization of HE; (d) innovation system and the role of R&D; (e) funding mechanisms; and (f) governance and co-ordination

Expected/desired changes to the structure of higher education leading to knowledge society

Although significant progress has been achieved in reforming and modernizing HE, new problems and issues arise that pose new challenges to HE institutions (HEI), governing bodies of the HE system, and society at large. Developing and transition economies face significant new trends in the global environment that affect not only the shape and mode of operation, but also the very purpose of tertiary education systems. Among the most critical dimensions of change are the convergent impacts of globalization, the increasing importance of knowledge as a main driver of growth, and the information and communication revolution. Knowledge accumulation and application have become major factors in economic development and are increasingly at the core of a country's competitive advantage in the global economy. The combination of increased computing power, diminishing prices of hardware and software, improvement of wireless and satellite technologies, and reduced telecommunication costs has all but removed the space and time barriers to information access and exchange.

In particular,

> . . . the growth of a global knowledge-based economy creates great opportunities, and poses great challenges, for all countries, but particularly for those dealing with difficult transitions from centralized forms of economic organization. To create these opportunities and navigate these risks, each country must solve three difficult problems. It must develop a coherent, multi-faceted national strategy for building and sustaining a knowledge-based economy. It must develop this strategy in a participatory, broad-based fashion that includes and empowers all major sectors of society, including the private sector, educators, scientists and innovators, civil society, the media and others. It must implement this strategy in a sustained and patient fashion, carefully balancing competing priorities, difficult tradeoffs, and interdependent changes with different time horizons, all in the context of opening progressively to a fast-paced, rapidly changing, unpredictable and highly competitive global economy.12

12 Building Knowledge Economies: Opportunities and Challenges for EU Accession Countries. Final Report of the Knowledge Economy Forum „Using Knowledge for Development in EU Accession Countries" organized by the World Bank in cooperation with the European Commission, the Organization for Economic Cooperation and Development, the European Bank for Reconstruction and Development, and the European Investment Bank, Paris, February 19-22, 2002.

In its turn, the National Development Plan (NDP), approved by the Cabinet of Ministers on 11 December 2001, states that:

> . . . the current economic model of Latvia will change, as high growth rates of economic development can only be ensured by a knowledge-based economy with intense use of high technologies. New sectors of the economy will develop and at the same time traditional sectors will be restructured.

Similar concepts can be found in the Long Term Strategy for Latvia's Development (Ministry of Economy, 2000); in the Concept Paper on Research and Development (Latvian Council of Science, 1998); and in the National Concept on Innovation (Ministry of Economy, 2001). Thus, during recent years, a growing consensus has been emerging to transform Latvia's economy into a knowledge-based economy, rich in human capital, innovation and the export of value added goods and services.

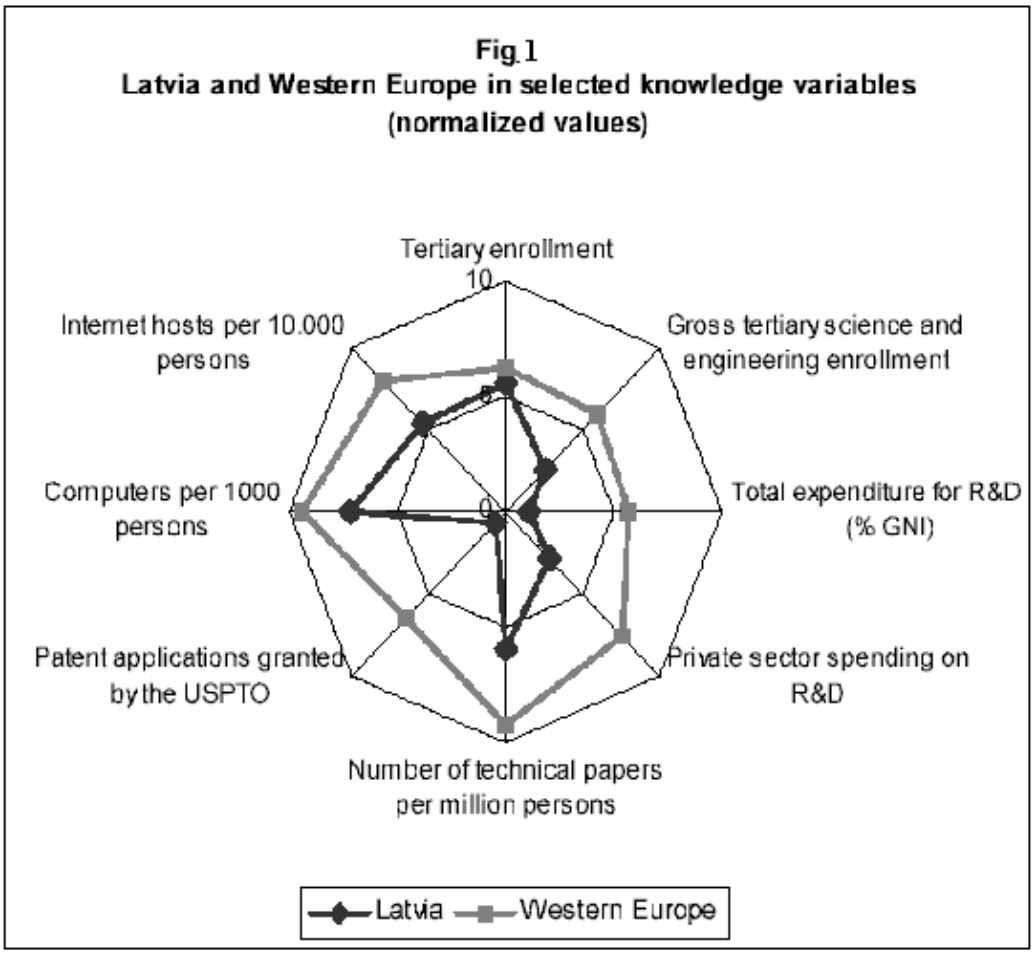
Latvia's national concept on innovation

Fast development of the national economy and the growth of social welfare for Latvia, as a small country with an open economy, is largely dependent on its ability to produce and offer competitive goods and services to the international market. In order to enhance the overall level of the state's competitiveness, it is necessary to implement a purposeful state innovation policy that promotes accelerated development of new knowledge-based sectors, as well as to increase the share of high value-added products within the traditional sectors. The development experience of the world's economically strongest countries shows that they have been creating an open economy for several decades. For some countries, the globalization of economic processes and the rapid development of technologies create unique opportunities for fast development; for other countries, it creates a certain threat of stagnation, or even decline. The ability to generate new ideas, and to use them commercially, is the main force ensuring economic growth. This process is equally important for all business directions and sectors (industry, services, tourism and agriculture), all types of businesses (micro, small, medium, large enterprises and multinational corporations), as well as for all social groups and regions. The dynamics of economic development no longer is determined solely by traditional resources such as labour, natural resources, capital and traditional sectors of industry and agriculture. Increasingly, the high-technology sectors are becoming the determinants of economic growth. The high-technology component has become the main source of competitiveness in all sectors of the economy. Yet, the development of high-technology companies, and the use of the latest technologies in traditional sector enterprises, require an economic environment favourable for innovation and innovative operations, such as in countries that implement policies for the development of national innovation and have national innovation systems working effectively (Ministry of Economy, 2001).

A first general overview of Latvia's position towards a knowledge-based economy is shown in Fig. 1; this compares Latvia's performance to that of the countries of Western Europe (those not part of the G7 Group) in a set of selected knowledge variables. It shows

that in all relevant variables, with the exception of tertiary enrolment, Latvia's performance clearly lags behind, particularly in those elements that are crucial for a productive national innovation system (NIS).

Fig.1
Latvia and Western Europe in selected knowledge variables (normalized values)



Source: The World Bank Institute (2002)

In order to overcome these limitations, the NDP foresees various convergent actions and the need for further reforms in the education sector: e.g. 'close co-operation between science, education and business will be strengthened, thus creating a basis for the development of a knowledge- and innovation-based economy', 'movement towards the information society will continue and the role of IT in development will grow rapidly', further restructuring of the educational system [will be] carried out in order to fully satisfy the needs of the labour market', etc.

Links between the structure of higher education and the academic culture

Being a part of academic society not only offers rights and privileges, but also imposes certain duties and obligations. One of the key benefits that the university environment provides is the academic freedom that compensates for the relatively low incomes, for instance. It is due to the insufficient financing of the higher education system that the academic staff lose their loyalty – by also working in another institution of higher education.

The loyalty of the academic staff towards their institution should be there, no matter what the level of that institution. A position at a university is often considered more prestigious, though that prestige may not necessarily mean a higher income.

Still, the prestige of regional higher educational in Latvia is comparatively low, though several factors (such as developed infrastructure, regional financing, increasing dominant local municipalities) could make studies and work at these institutions more attractive.

The most important factor is the ability of the academic staff to combine tuition and research work, which usually explains the loyalty towards a particular institution – ideally, the tuition and research work should go hand in hand throughout one's academic career.