

CHAPTER

6

Comprehensive Universities in Continental Europe: Falling Behind?¹

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INTRODUCTION: THE GRAND HISTORY

Universities in continental Europe have a long tradition of nearly one thousand years, incorporating the idea of the “Greek academia”. The foundation of universities spread rapidly throughout medieval Europe, with Bologna (1088) and Paris (1150) as the first, acting as models for the others to come. The university started as a “universitas magistrorum et scholarium”, a corporation of teachers and students, enjoying legal and financial privileges.

In the early 17th century the European concept of a university reached North America and, thus, began to spread around the globe. Today, the world is witnessing another triumph of the university idea, especially in the developing world. India, for example, aims to increase the number of universities from about 300 in the year 2005 to 1,500 in the year 2015 (*Times Higher Education Supplement*, “Bids invited for mutual gain”, 27 April 2007).

However, there were also periods of decline. E.g., during the French Revolution, universities were regarded as outdated and impeding social progress. Universities were replaced with “*écoles spéciales*” (today France’s *grandes écoles*; see De Talleyrand-Perigord [1791]). Many technical universities throughout continental Europe were founded as an “*école polytechnique*” in

1 I wish to thank Martin Fieder for helping me with the statistics on university rankings and for valuable suggestions and comments.

the first half of the 19th century. Responding to this radical and utilitarian challenge, and after many universities had been closed (Langewiesche [2005] reports that more than 50% of the universities in continental Europe were closed during the Napoleonic period), Humboldt designed the concept of the “Humboldtian” research university, a comprehensive university (“universitas litterarum”) in quest of scientific truth and, idealistically, not geared to societal demands. The idea of freedom of research and teaching was stressed by Schleiermacher. This philosophically legitimized rejuvenation of the idea of a university originated in continental Europe, in Prussia, around 1800. As a consequence, universities abandoned bachelor and master programmes and started to concentrate on doctoral studies only. The success of the Humboldtian research universities reshaped Ph.D. education all over the world.

When Johns Hopkins University initiated Ph.D. programmes in the late 19th century, the US system of colleges and universities converted to a hybrid one: On top of the medieval, still British college education, Humboldtian Ph.D. programmes were laid. This hybrid system facilitated the “massification” of the higher education sector in the late 20th century. It comprised a three-tier system allowing universities to adopt a diversity of missions and profiles and, thus, to cater effectively to the various educational demands of society.

The three-tier system is now being taken over in continental Europe through the Bologna Process, but, of course, continental Europe can claim to be the originator of this study architecture.

Continental European universities have been falling behind since the 1930s. Concerning research and teaching performance, the Anglo-American university system seems to dominate worldwide, particularly if peak performance is considered. This domination is most easily visible in international rankings and league tables. Although the relevance of league tables and international rankings is disputed (Bowden, 2000), they seem to be highly relevant, especially when providing a broad overview for primary customers — students, their parents (Dill & Soo, 2005) and the public.

In the following section, I describe three international rankings in more detail: i) the *Times Higher Education* Ranking 2006; ii) the Shanghai World University Ranking 2006; and iii) the *Newsweek* 2006 University Ranking (a methodological mix of *Times Higher Education* Ranking and the Shanghai Ranking). This description will be supplemented by an analysis of the most “Highly Cited Researchers (ISI)” in the fields of mathematics, physics and molecular biology in respect to the geographical region of their workplace (i.e. continental Europe, UK and US). In sections 3 and 4, I will discuss various reasons why continental Europe is apparently falling behind. Reform issues of continental European universities are presented in Section 5.

INTERNATIONAL RANKINGS

Methodologically, the *Times Higher Education* Ranking and the Shanghai Ranking differ considerably. The former uses six indicators contributing with different weights to the overall score: Peer Review Score (40%); Recruiter Review (10%); International Faculty Score (5%); International Students Score (5%); Ratio Faculty/Students Score (20%) and Citations/Faculty Score (20%). The Shanghai Ranking also uses six, but different indicators: Number of alumni winning Nobel Prizes and Fields Medals (10%); number of staff winning Nobel Prizes and Fields Medals (20%); highly cited researchers (20%); articles indexed in SCI and SSCI (20%); articles published in *Science* and *Nature* (20%); performance in respect to size of institution (10%). In applying these indicators, the Shanghai Ranking is clearly biased towards the sciences. In addition, the use of Nobel Prize winners can be contested, although it represents an unequivocal indicator (Braun *et al.*, 2003).

Without discussing these issues further, the following results appear when comparing continental Europe, the UK and the US using the rankings mentioned above:

University Rankings

Times Higher Education Ranking (THES) 2006

- Among the **top 20** universities in the world, there is only one university from continental Europe (Ecole Normale Supérieure, Paris). Yet four universities are located in the UK (Cambridge, Oxford, Imperial College, LSE) and 11 universities in the US.
- Among the **top 100** universities in the world, there are 27 continental European universities, 16 universities from the UK and 35 universities from the US.
- Among the **top 200** universities in the world, there are 55 continental European universities, 28 come from the UK and 55 universities from the US.

Shanghai World University Ranking 2006

- Among the **top 20**, there are no continental European universities, yet two from the UK (Cambridge, Oxford) and 17 from the US.
- Among the **top 100**, there are 22 continental European universities, 11 from the UK and 53 from the US.
- Among the **top 200**, there are 49 continental European universities, 22 from the UK and 87 from the US.

Newsweek 2006 University Ranking (methodological mix of THES and Shanghai)

- Among the **top 20**, there is no continental European university, but three universities come from the UK (Cambridge, Oxford, Imperial College) and 15 from the US.
- Among the **top 100**, there are 16 continental European universities, 17 universities from the UK and 42 from the US. (There is only a list of 100 universities).

The outcomes in the three rankings are not identical, but similar. There is an extremely high concentration of the very best in the US. Only UK universities are able to compete globally. Yet among the top 200, just counting entries in the ranking tables, continental Europe is nearly on par with the US (on par according to THES, less so according to Shanghai).

Ranking of individual researchers ISI — Highly Cited Researchers (as of 10 May 2007)

Mathematics

- Among the top 20, there are seven researchers from continental Europe, two from the UK and 10 researchers come from the US.
- Among the top 100 researchers, 18 researchers come from continental Europe, 10 from the UK, 66 from the US.
- Among the top 200 researchers, 32 researchers come from continental Europe, 16 from the UK, 136 from the US.

Physics

- Among the top 20, there are six researchers from continental Europe, one from the UK and eight from the US.
- Among the top 100 researchers, 32 researchers come from continental Europe, 10 from the UK, 50 from the US.
- Among the top 200 researchers, 51 researchers come from continental Europe, 15 from the UK, 101 from the US.

Molecular Biology

- Among the top 20, there are seven researchers from continental Europe and 13 from the US.
- Among the top 100 researchers, 17 researchers come from continental Europe, five from the UK, 75 from the US.
- Among the top 200 researchers, 35 researchers come from continental Europe, 10 from the UK, 144 from the US.

Examining the results in these three subject areas, the outcome is at first glance surprising: Among the top 20 most highly cited researchers, continental Europe seems to be nearly on a par with the US; however, the gap widens between continental Europe and the US when it comes to the top 200 researchers. It seems that US top universities excel not so much by employing the few very top stars, but by engaging the bulk of the top 100 of the top 200 researchers. Obviously, continental European universities lack critical mass at the top.

IS CONTINENTAL EUROPE FALLING BEHIND?

Concerning international rankings, continental Europe is clearly situated behind the US; this is particularly the case if considering the first 20 places in the overall university rankings and the first 200 places with respect to individual researchers. In contrast, the UK manages quite well and keeps her position, although mainly through the flagship “Oxbridge” and some other universities.

Continental Europe’s position deteriorates if the placement is corrected by population figures. Continental Europe, the EU member states in continental Europe taken as a proxy, counts about 420 million inhabitants, the US 300 million and the UK 60 million. If the numbers of inhabitants are considered, continental Europe is clearly not efficiently using its enormous human capital relative to the US and UK. In fact, Europe seems to be wasting its human capital, if the constant brain drain over the Atlantic in the last 70 years is taken into account.

Another interesting question is whether the positions of continental European universities are stable. Does the trend point up- or downwards? Unfortunately, the time span available in international ranking is too short to yield accurate trend estimates. Changes in the ranking positions, as they appear during the last two or three years, are not so much due to a changing performance of universities, but to varying assessments of performance by ranking institutions. Counting Nobel Prizes is not a very serious business.

Given the fact that the developing world, especially Asia, is increasingly recognizing the importance of research and higher education for economic development (Siannesi, 2003), we can expect the developing world to invest ever more in higher education and research, and hence in universities. This might cause continental European universities to lose further ground, not because of a widening gap to US universities, but through intensified competition induced by additional competitors outside North America and Europe.

University reforms, of course, may change overall teaching and research performance. Yet, improved performance due to reforms should not be expected quickly, as Australian examples demonstrate (Gamage & Mininberg, 2003). Among the top 20 most highly cited researchers (in the fields of

mathematics, physics and molecular biology), continental Europe is better positioned than continental European universities per se. This gives cause for hope that building critical mass around strong research by individuals in continental Europe may be the best strategy to boost the performance of these institutions within a short period.

WHAT ARE THE REASONS FOR THE CURRENT POSITION OF CONTINENTAL EUROPEAN UNIVERSITIES?

The dominance of English and national fragmentations

In and after the 1930s, the centres of scientific communities clearly shifted to Anglo-American countries, making English the dominant scientific language. For example, until the 1930s, the main language of academic communities in physics was German. Around and after the Second World War this changed dramatically. Now, the main language in physics is English. If members of the international scientific communities meet at congresses, English is often the only language spoken. This shift of scientific centres to Anglo-Saxon countries is impressively documented when looking at the editorial boards of influential science journals.

The shift of centres has consequences on the scientific development in continental Europe. Blau (1994) argues that debates on the state of scientific progress and the competition among scientific communities for new results — now mainly conducted in US (and UK) universities — have an important side effect: they spur the development of new scientific fields. Yet, this lack of positive feedback is not the sole factor which disadvantages continental Europe.

Another factor is that, in continental Europe, the university system is diverse, but this diversification is mainly the result of national fragmentations, and is not an outcome of a division of labour by competing and cooperating universities. These national fragmentations reflect the heavy impact that the emergence of nation states with national bureaucracies has had on universities.

The national differences within continental Europe are large. France, for example, has a highly centralized university system with national recruitments of its staff and specific borderlines between the university system and the research system (dominated by the CNRS). Germany, in contrast, has a decentralized university system that is too strongly governed by regional interests and by “strong local personalities”, also within the universities (Blau, 1994). Moreover, much of the efforts in basic research are conducted outside the university system (Max Planck Society, Helmholtz Society, Fraunhofer Society).

The competition among continental European universities of different national origins is weak with respect to students, staff and ideas. Language borders and national regulations (e.g. pension systems) are still responsible for

low mobility rates of students and staff between universities across borders. As the Rector of the University of Vienna, I can confirm this: Almost all professorial positions are advertised internationally, but most applications still come from German-speaking countries only.

However, continental Europe could turn its multiculturalism and multilingualism (although not an ethnic diversity) to an advantage, especially when communicating with the developing world.

Positive scale effects

The US university system is characterized by an enormous expansion and diversification in the 20th century. Mobility of students and staff and common quality standards have created a large area of knowledge. The diversification of higher education and research in the US is less dependent on state borders, but is driven by the demands of the society and the market. Private institutions compete with public entities. Currently there are about 4,000 colleges and universities in the US: these institutions differ tremendously in size, mission, constituencies and funding resources (Gamage & Mininberg, 2003; Duderstadt, 1999). There are only 200-300 research intensive universities. In addition, the US introduced a highly competitive and diverse grant system (NSF, NIH). The US development is in line with what Peter Blau suggested: expansion enables diversification and diversification in turn facilitates the changes for innovation (Blau, 1994).

In Australia as well, diversification with a push for the private sector has taken place since the 1980s. Its integration into global markets of higher education, manifested by an increasing inflow of overseas students, is a good indication for the increasing importance of the Australian university system. Australia seems to be moving in the American direction (Gamage & Mininberg, 2003) and has already become a “new” and strong competitor on global higher education markets.

Compared to the US, the UK lacks a comparable diversification. The UK system, however, has successfully positioned its flagship “Oxbridge” and certain other universities globally. The higher education institutions there are clearly better prepared for an increasingly global competition.

Other factors influencing the overall performance of European universities might be:

- Continental Europe still suffers from the emigration of the 1930s and 1940s and the accompanying shift of intellectual focus towards Anglo-Saxon countries.
- The cooperative governance of universities in the post-1968 era had considerable negative effects, especially on recruitment policies. The obvious consequence of the cooperative governance was an increase

of inner recruitment and, in addition, researchers and teachers quickly reached tenured positions, often irrespective of their performance. As a consequence, the now “young generation of scientists” is confronted with dramatically reduced career opportunities, again fostering emigration of human capital. To overcome such tendencies towards creating “fixed positions”, many German universities (respectively their regional governments) introduced an increasingly higher percentage of time-limited contracts (up to 90%). However, these abrupt measures also had negative effects because of increased uncertainties for university careers. The university career became less attractive (particularly for talented candidates).

- The concentration on Ph.D. programmes in the 19th century reduced educational opportunities through the abolition of the Bachelor and Master system. In the 20th century this tendency was corrected by introducing Diploma or Master studies, but only due to the Bologna Process were Bachelor studies re-introduced in continental Europe.

REFORM AGENDA FOR EUROPE: MODERNISATION AGENDA

Europe’s Universities still operate mostly in small national systems or sub-systems, which results in a lack of recognition of foreign degrees and in low levels of trans-national or trans-sectoral mobility of researchers and students. To overcome these fragmentations, the creation of the Europe of Knowledge, comprising the European Higher Education Area (Bologna Process) and the European Research Area, is a goal which should be pursued with great efforts at the European level and which should bring first results by 2010. European universities need the scale effects and the competitive pressures of a large area which a Europe of Knowledge could provide.

Although the Bologna Process, an intergovernmental process now comprising 46 European states, is moving on and will likely reach its ambitious goals of enhancing mobility through Erasmus and of introducing a common study architecture with a wave of modern curricula by 2010, and although the European Research Area was given a boost by setting up the European Research Council on 1 January 2007, the university system will not be sufficiently modernized by these activities. Special measures are necessary to move the universities out of the shadows of governmental bureaucracies which still tend to micro-manage the nationally fragmented university systems.

During the informal meeting of the European Council at Hampton Court, at the end of October 2005, and to the surprise of his colleagues, the British Prime Minister Tony Blair emphasized how important a modernized university system would be for a refocused Lisbon strategy. The Commission reacted to the discussion at this meeting (“Hampton Court Follow-Up”) by issuing, on

10 May 2006, with input from experts, a communication on “Delivering on the modernisation agenda for universities: education, research and innovation” (COM [2006] 208 final). Since the Hampton Court meeting of October 2005, the discussion of the modernization agenda has centred on the following points for action:

- Universities are key players in Europe’s future and for the successful transition to a knowledge-based economy and society. The knowledge-based economy will also dramatically change the role and the manner of research and teaching: scientists will be able to work worldwide, not necessarily located at a particular university and a large amount of data and research tools will be freely available through the net (a good example for ongoing developments are free economic and census data as well as free analysis programmes). In the framework of these ongoing developments, the role and the definition of a scientist will change. More people will be engaged in the “production of knowledge”. Universities are well advised to take these developments into account.
- Overcoming the fragmentation in continental Europe — the geographical and inter-sectoral mobility within Europe needs to be increased substantially (e.g., through Erasmus and Socrates Programs). The Bologna Process should also enhance the vertical mobility of graduates in the sense that one earns a Bachelor’s degree in country A, a Master’s degree in country B and a Ph.D. in country C. The cross-border employability of graduates has to follow the increased internationalization of economies in Europe which can be witnessed by increased foreign direct investment and the high export and import ratios of GDP.
- Cooperation *and* competition among universities within Europe has to increase. So far, Framework Programs and Socrates have strengthened the cooperation among universities. Now, universities have started to compete within Europe: e.g., through grant schemes of the ERC and the forthcoming implementation of the EIT (through the formation of KICs: knowledge and innovation communities).
- The European education and research system should be diversified at all levels, as well as on the grant system level. The diversification should not be ordered from above, but should be the outcome of a bottom-up process, driven by appropriate incentive schemes.
- An attractive Higher Education and Research Area has to be created: attracting scientists and students from over the world — avoiding brain drain. The Bologna Process, supported by the referenced Lisbon Strategy, may make continental Europe particularly attractive for students

and scientists from the developing world by using Europe's multicultural and multilingual "profile". Continental Europe should foster the formation of international scientific communities with the increasing participation of students and scientists from the developing world.

- Dialogue with society and the economy has to be strengthened so as to better legitimize more investments in the university system, in order to overcome the funding gaps of the European university system.

CHALLENGES AHEAD

Evidently, continental European universities need to do a lot in order to be able to compete globally. Alas, there are additional challenges ahead:

- Continental Europe should be better prepared for the demographic developments in the next 20 years. There will be an increased competition for resources between health care, care for the elderly on the one hand and higher education and research on the other hand (Schuller, 2005).
- Continental European universities must give young, performance-oriented scientists a realistic chance to work independently and to advance in the university system. University systems in Continental Europe are still characterized by feudal professorial positions.
- Searching, finding and supporting new ideas have to be backed by more risk-taking investments.

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