Leading European Research Universities
in an Increasingly Competitive Environment

Luc Weber*

Introduction

The continuous transformation of the European higher education and research sector has been subject to a strong acceleration over the last five years, which will bring about deep changes in the coming decade. One of the main reasons is universal: the globalization of the world and accelerating scientific and technological progress. The other reasons are specific to Europe: the determination of the national and European education authorities, supported by the higher education and research sector, to create a European space for higher education and research without internal and external borders (see Zgaga, 2003; Reichert & Tauch, 2003, as well as Weber & Zgaga, 2004).

By far the main consequence of these significant changes is the fact that the environment in which European universities function will become more transparent and competitive. Universities will have to change more over the next 10 years than they have over the last 50 years, during which time they had to adapt to the massification of higher education. During this latter period, they faced the major challenge of boosting their capacity to absorb additional students. But few changes were made regarding their missions, structure and decision-making processes. Today's environment requires strategic decisions affecting the missions and the structure of each institution. All universities will therefore have to take initiatives and implement clear strategies to position themselves better. This will clearly require major transformations and, as these measures and decisions are difficult to make and to implement, they are quite challenging for the leadership of the institutions.

In the next section, I shall briefly describe the specificities of the disruptions which are currently taking place in the European higher education and research sector. Then, I shall identify the most important challenges for research universities. Finally, I shall analyse the most promising alternative strategies for universities and identify the responsibilities of university leaders to decide and implement them.

Specific Changes in the European Higher Education and Research Sector

Both Europe, as a continent, and its higher education and research sector have entered a period of rapid and deep change. The integration of Europe launched in 1957, with six countries deciding to create the European Economic Community, entered a new phase at the turn of the millennium with the

* Former President, Professor, University of Geneva, e-mail luc.weber@weberfamily.ch

creation of a single currency for 12 countries－the Euro－and with the integration of ten additional states from Central and Eastern Europe, enlarging the European Union to 25 countries on May 1 2004.

The European Higher Education Area or the Bologna Process   The European higher education and research sector has been shaken by two political initiatives. The first, launched in 1998 by four Ministers of Education meeting at the Sorbonne in Paris (Sorbonne Declaration, 1998) and confirmed on a much broader basis in 1999 in Bologna, aims at creating a "European Higher Education Area" (EHEA) without borders by 2010. The declaration signed in Bologna (1999) by 29 Ministers of Education stressed the "central role of universities in developing European cultural dimensions", and it emphasized the "creation of the European area of higher education as a key way to promote citizens' mobility and employability and the continent's overall development". Realizing that the European higher education system was anything but transparent, and that there were numerous barriers to the mobility of students between countries, the Ministers of Education pledged to take the necessary measures to overcome these difficulties.

The central idea of the Bologna process is that each country adopts a system articulated around "Bachelors" and "Masters" degrees. The first cycle, the "Bachelor", should be conceived as a first period of education, which should also facilitate the entry of students to employment: basic skills are transmitted alongside scientific knowledge and methodologies. The second cycle, the "Master", should allow students to deepen their knowledge, either by specializing in a discipline or by embracing a multidisciplinary or interdisciplinary approach. At the recent Education Ministers conference in September 2003 in Berlin, it was decided, at the initiative of the university community, that doctoral studies should also be added to the system as a 3rd cycle, in order to link education and research (Berlin communiqué, 2003). Presently, 40 of the 50 countries of the European continent, including the Russian federation, are participating in the Bologna process, and a couple more will join in the years to come.

To make the creation of the European higher education area possible, many accompanying measures were taken. Let us mention just two of them. First, generalization of the introduction of the European Credit Transfer System (ECTS) (2003), for validating credits obtained in other universities or study experience. Second, a willingness to develop a rigorous quality culture in order to build the necessary trust between institutions indispensable for the mobility of students between institutions and, more generally, to improve the quality of teaching and research (Middlehurst, 2003). Even if the debate is still quite open, we are heading towards a dual system of accreditation of institutions to guarantee that they reach a minimum standard, and promotion of an extensive quality culture within each institution, which should be inspired and monitored by independent agencies.

The European Research Area   The second initiative was taken in 2000 in Lisbon by the European Council (Lisbon European Council, 2000), that is the Council of Heads of States, and

confirmed in 2002 in Barcelona by the same Council (Barcelona European Council, 2002). Observing the continuous rapid growth of the U.S. economy during more than a decade, it is assumed that this success was in large part due to the fact that knowledge is to a greater degree than before driving economic performance. The European Council decided in 2000 in Lisbon that the European Union should increase its investments in research and technology development in order to become "the most competitive and dynamic knowledge-based economy in the world" (Lisbon European Council－President's conclusion, 2000). The basic strategy proposed was to create the "European Research Area" (ERA) (COM, (2000) 6 and (2000) 612 final, and (2002b) 565 final).

The belief is that, in order to unleash the huge potential of European research, it is essential to integrate national efforts better by encouraging researchers to work better together at the European Union level, by promoting cooperation between universities and industry and by lowering administrative and political barriers to this cooperation. The tools enacted or considered to reach this target are manifold, in particular:

‧ introduction of new tools in the 6th traditional "European research Framework programmes" (2002);

‧ a willingness to increase the general effort made in research to reach 3 % of gross domestic product－2/3 of that effort having to be made by the private sector (European Commission, 2002a and 2003a);

‧ a willingness to address the "European paradox" in that the excellent level of basic research－probably as good as in the United States－does not translate into new applications as well as in the United States; and finally,

‧ a project to create a European Research Council which would finance basic research globally at a European level (ESF, 2003).

Related or Ongoing Challenges   If there is no doubt that the discussion around higher education and research in Europe is at present largely dominated by the Bologna process and the creation of the ERA, many other issues－related or ongoing－deserve as much attention (Weber & Zgaga, 2004 and Weber & Duderstadt, 2004). We mention only two that we consider the most important.

‧ Under-funding of the higher education and research sector. Financing higher education and research is obviously an ongoing issue in Europe. This has at least been recognized in some countries and by the European Union in the communication "The role of Universities in the Europe of knowledge" (2003b). Supporting the creation of the ERA, the communication openly stresses in its introductory part that "if it is to achieve its ambition of becoming the world's most competitive and dynamic knowledge-based economy and society, Europe simply must have a first-class university system－with universities recognized internationally

as the best in the various fields of activities and areas in which they are involved." However, the communication states further that "European universities are not at present globally competitive with those of our major partners, even though they produce high-quality scientific publications". One of the main reasons is that there are "insufficient means" for their complex activities. The communication tries to identify possible points of increasing and diversifying universities' income and using the available financial resources more effectively. The large increase in the number of students over the last 30 years was never matched with an equivalent increase in funding (Weber, 2004). Therefore, over the years, public subsidies have been more or less stagnating or even decreasing per student in many countries; and industry support, mainly to research, although increasing slightly, has not compensated for the diminishing public input. Moreover, a recent willingness expressed to significantly increase financial support to universities and research is today threatened by the sluggish or stagnant economy. This explains why one of the most sensitive issues in Europe is the determination of an increasing number of political or university leaders to introduce－ or to significantly increase－student fees.

· Autonomy, governance and management. The topic of university autonomy, governance and management is also receiving increasing attention in Europe. The main reason is that the fast-changing environment and permanent budget shortages are revealing the limits of the present decision-making mechanisms. University decision-making mechanisms have always been complicated and cumbersome due to the willingness to apply a system of shared governance, mainly between university professors. Things became even more complicated－not to say more cumbersome－in the 1970s when many European universities introduced participation of other stakeholders, in particular the students, in the decision process. This situation has led to increasing dissatisfaction on the part of the political authorities, who complain ever more frequently that university decisions are not transparent and that universities are unable to make decisions. These have led to increasing pressure for better accountability and to a clear tendency to political micro-management (see Hirsch & Weber, 2001). At present a move backwards can be observed, aimed at streamlining the decision process to make it more hierarchical and hopefully more favourable to decision-making, in particular, making unpopular ones.

· Other questions. Many other questions are on the agenda in different countries and institutions. Let us briefly list some of them: promotion of learning; use of information technologies in teaching and distance learning; lifelong learning; quality of pre-college education; relationships and responsibilities of universities with and towards their communities; political correctness; and the replacement of the numerous teachers who are

retiring or are going to retire. We shall not comment on them here, but will consider a few of them later when we propose ways to handle them.

Challenges for the European Research Universities and their Leaders

The political, economic and social changes, as well as these two initiatives, are giving rise to a series of reforms, some with profound consequences. These reforms were generally initiated by national governments and by the European Union, but various university organizations and individual universities, as well as the Council of Europe, subsequently took a proactive role. The clear political objective is to improve the competitiveness of the European economy thanks to the promotion of knowledge creation and transfer, and to the improved efficiency of the higher education and research sector, globally and at the level of each institution. Universities themselves are using this opportunity to reaffirm their central role in the creation of new knowledge and in the training of researchers, as well as to reinforce arguments for their autonomy. We shall now identify what are the major challenges (threats and opportunities) for the research intensive universities and what could be the most promising alternative strategies.

Identification of the most Important Threats and Opportunities   Our reading of the recent and expected development is that the challenges for the next 10 years will be concentrated mainly around the three following issues (see also Weber & Zgaga, 2004)**.**

· Increasing competition. Globalization and the move towards the creation of the European higher education and research areas will create more transparency and therefore increase competition between institutions and national systems. This will force each institution to differentiate itself from others by better profiling and positioning itself in order to become more visible and attractive. This means in particular further strengthening strong points or searching for niches in order to exploit comparative advantages, and abandoning weaker areas. This profiling of institutions touches a multitude of strategic issues, like the type of research (basic, applied), the focus of research, the proportion of effort given to research relative to teaching, the level at which most of the teaching is done (Bachelor, Master, Doctorate), the preferred pedagogy (teaching pushed or learning pulled), the type of students (traditional, full-time attendance, distance or lifelong students), the way knowledge is transferred (traditional courses and workshop or more e-courseware and distance learning), as well as the intensity of use of new technologies.

· Secure enough funding. Quality research and teaching in a competitive world will continue to become more expensive. Research requires more and more expensive scientific equipment or investigations, as well as bigger teams, as it becomes more complex and interdisciplinary. Quality teaching, and, in particular, teaching at an advanced level and teaching focused on the promotion of a learning culture, will remain labour intensive and therefore be increasingly

costly. The preparation of material for distance learning is also very costly, even if the material is then used by a great number of students. At the same time, state budgets are under increasing stress due, in particular, to ageing populations and the heritage of non-sustainable social security systems, as well as to the tendency of our societies to become predominantly individualistic.

・ Regaining trust from the public authorities and the population. Universities no longer enjoy an unlimited trust of public authorities and the general public. The climate of increased competition in the private sector, reinforced by tight public budgets, the lack of transparency of their decisions, their great difficulty in taking decisions when external forces require them to make a choice, and the increasing sophistication and societal impact of science are provoking an increasing mistrust of universities and of science. To guarantee the autonomy essential to their creativity, universities must therefore at all costs regain this trust.

Promising Alternative Strategies

This new environment is obviously seriously challenging Europe's research intensive universities. The fact that the climate of increased competition will encourage universities to specialize more in what they are doing best and even try to excel in specific niches will clearly affect also the research intensive universities. They could lose students in favour of those institutions that pay greater attention to the adaptation of their programs to the short-term requirements of the labour market and to the right balance and coherence of their programs. They could also be threatened by small or specialized organizations, which are trying to excel in only a few well chosen areas. As they are active in basic research and postgraduate studies, they are expensive institutions which require ample funding. The present mistrust of science and basic research affects them also directly as they are principally active in research at the frontier of human knowledge; in other words, in a type of research which is particularly difficult to explain and justify to the population at large. Obviously, research intensive universities are challenged by this changing environment and must therefore also introduce clear and determined strategies to maintain or regain their envied position. Below are the main strategic questions that leaders of research universities must consider.

<u>Revising the Missions of Universities</u>   Universities should revise the way they fulfill their most important missions, that is to produce new knowledge and to transmit knowledge. To us, these two missions, in particular the teaching mission, as well as part of the research mission, should not only be conceived as aims for the universities themselves, but as aims which should serve society. The right balance between curiosity driven research, which may or may not serve society in the long run, and research that aims at being useful to society appears to be the main point of misunderstanding between universities and society (this is also partly true with teaching). This may explain somewhat why external stakeholders are permanently trying to intervene in university choices. As it is

impossible to prove that curiosity driven research responds better to the long term needs of society than research which openly aims at responding to societal needs, it is an absolute necessity to leave room for both. The same is true for teaching programs, between programs that are essentially research-led and programs that are more labour-market orientated. This is clearly the philosophy that has always dominated; however, I have the feeling that the pressures for more targeted research and teaching are constantly increasing. For universities, this means that, if they want to secure enough room for curiosity driven research and research-led teaching, they must make a greater effort to serve society (the third mission of universities) and to be more transparent and accountable. In other words, universities have to deserve the autonomy they request.

Better Profiling and Positioning (Strategic Thinking)   Due to the increasing complexity of science, the European system is probably weakened by the fact that there are too many institutions trying to do more or less the same (being universal institutions, covering most traditional disciplines) and that too few are really strong in most disciplines or in a selection of disciplines. In other words, there are too few "Oxbridges" or not enough specialization. This is a very serious and political issue, but Europe and the European countries cannot ignore this reality for many more years!

It appears also that most of the current top research universities such as Oxbridge, the Federal Institutes of technology in Zurich and Lausanne, the Catholic University of Leuven or Louvain-la-Neuve, the Universities of Geneva or Leiden and other institutions not named here have generally not really been following strict voluntary strategies to position themselves. Their success can be attributed to a comparatively favourable environment regarding funding and autonomy from the state, and, indeed, to their rather competitive recruitment policy. All these factors secured them an excellent position in the competitive search for research funding and highly qualified teachers and researchers. In other words, they benefited from a "virtuous circle".

The most challenging question today is to know if such an attitude of "laisser-faire" at the level of the leadership of the institution will still be sufficient in the decade to come. My belief is that it will not, as the changes are of a much deeper nature than those of the past. These universities will be more and more challenged by other institutions trying to profile or position themselves better to meet increasing competition. Moreover, the tension between expenditures and revenues will increase even more. For at least these two reasons, research-intensive universities will also be forced to better determine their priorities. This means that they will have to think strategically to better position themselves. This implies a rigorous analysis of their strengths and weaknesses, as well as of the threats and opportunities. Such an analysis must be in-depth if it is to be useful. In other words, it is no longer sufficient to ask if an extra professor is needed in a particular discipline! Strategic questions regarding the positioning of the university must as a matter of urgency raise key structural issues.

The types of question that should be raised and responded to, and which will require very determined implementation later, are the following.

Considering that the Bologna process will end up with a clearer separation between general studies and more advanced studies at the postgraduate level (2nd and 3rd cycles), research intensive universities should ask themselves if they should not concentrate most or all of their effort on clearly research-led teaching, that is at the Master and PhD levels, reducing the number of Bachelor degrees to those necessary for the local community or organizing lesser, but more broadly conceived Bachelors courses. Such a strategy would provoke a decrease of the total number of students, but should free precious human resources to increase the number of specialized or interdisciplinary programs and to improve the quality of teaching. As other institutions will opt for the opposite solution, this trend would end up, through specialization, in a greater differentiation of institutions, some being even more research intensive and some more teaching orientated, as well as some which will be searching excellence in a few specializations.

Research universities should also make sure that a critical mass is reached in most of the disciplines they offer. This is a necessary condition for quality and for an efficient use of resources. Institutions should envisage all possible alternative solutions when this criterion is not satisfied. The solutions open to them are: closing a department or a subdivision; setting up a global solution with one or a couple of other institutions in order for all of them to improve the critical mass of departments; merging with another institution or absorbing another institution; or, finally, considering creating a strong network with other institutions. However, due to the characteristics of Europe as a set of national systems, it is unlikely that these transformations will end up with the creation of a few very big top universities like in the United States. It is more likely that specialization will take place within each country more than across the continent, which means that Europe will still have a greater number of top research intensive universities, but that these will in general be smaller or more specialized, that is covering only certain areas of scientific curiosity.

Increased Autonomy and better Governance and Management   Better profiling or positioning a university implies that the leadership can initiate the analysis and, more importantly, make decisions and implement them; this often signifies making structural changes that affect people. Observation shows unambiguously that this cannot be done without strong leadership. This is certainly not the case yet in the immense majority of European universities, which are characterized by a cumbersome and extremely slow decision process. However, an ideal solution is not easy to conceive. One cannot simply give greater decision power to the rector or president because, in universities as in no other institutions, most of the knowledge is at the bottom of the hierarchy (Weber, 2001). Therefore, there is a very serious trade-off between the creation of a streamlined as well as a more hierarchical process and counting on a more democratic system, which is necessarily heavy and cumbersome, but allows for the participation of all those who can make a contribution to the improvement of the institution. Therefore, the necessary solution should be articulated around three

criteria: strong leadership, light decision and control structures, and broad consultation of all the stakeholders.

University activities — like all human activities — are becoming more and more complex. Moreover, university staff, who represent almost 70-80 % of total expenditure, are so costly that their work must be better supported. This is why good management counts. There are a few rules to secure good management. One of them is that leaders can no longer be simply excellent scientists or teachers, but must also have a sense of management issues and be trained for that. More than in any other human institutions, university management requires a long-term perspective. Finally, the use of management tools as support to decision making has become crucial.

Another crucial issue in Europe is the mechanism of control and influence exercised by the government. As has been mentioned, the institutional autonomy of public universities is frequently limited or threatened. One solution that both public authorities and universities are exploring to solve the problem is to create an administrative board between the state and the institution, and give it real decision power (Rhodes, 2004). This would allow for a clear separation between the bodies that propose a decision, make it and control it. The central person in a university, the president or rector, is either in a position to make a decision which must therefore be controlled by another body, the board, or is in a position to propose a decision which should therefore be made by the board, and controlled by the State. When considering the composition of the board, the delicate question is to decide if members of the institution can be members of the board or if the latter should be composed exclusively of external members. Obviously, there are good arguments for both solutions, but a pure system of decision and control weighs in favour of a board composed only of external members.

Develop a Culture of Quality   It is also paradoxical that research intensive universities are in general slow in introducing measures of quality assurance. This is partly due to the position of the researchers who get their scientific reputation outside the institution in their discipline; therefore, they tend to expect as much support as possible from their institution, but often do not care to the same degree about serving it. This is also partly due to the broad autonomy given to the researchers to choose their field of research.

However, even if the research intensive universities are satisfied with being known in research circles, they should realize that they could most likely improve their global performance in developing an effective culture of quality. This would mean, according to the strategy promoted by the European University Association (Graz declaration, 2003), running a continuous system of quality audit of departments and other institutes or subdivisions, paying attention both to their research output and teaching outcome. The methodology should be organized around the drafting of a self-evaluation report, visits of peers who prepare evaluation reports and finally discussion of these reports to examine problems and possible improvements.

Experience shows that a serious procedure for quality evaluation allows identification of many shortcomings and greatly helps to solve them, as it helps make evident what was often known, but hidden. In other words, good universities can, like all other universities, improve thanks to the implementation of a quality culture.

Recruitment Policy   Paradoxically, it appears to me that the most important action ambitious universities must take is to continue to apply with great rigour one policy that has been the key to their success in the past: that is a very strict recruitment policy. More than any other institution, the quality of a university depends on the quality of its staff. In particular, there is no doubt that to be among the best, a university must be able to keep or attract the best researchers and professors, those able to innovate or to offer solutions at a high level of complexity. This requires a very rigorous recruitment and promotion policy, based on open competition between potential candidates. Paradoxically, the present top research universities are in a better position to enter into this increasingly competitive environment as they can in general already count on quality human resources. As this is a limiting factor, it is easier to maintain an advantage than to search for these people. However, those universities subordinated to strict public sector rules may have a more difficult time as they do not have the ability to adapt the level of salaries according to those which prevail in some disciplines, being therefore unable to attract the best people. However, this argument should not be taken too absolutely as it has been proven that the quality of the research environment (equipment, research staff at disposal, environment) plays a compensating role.

This means also that top research universities must be able to attract the best students. To make this possible, the institutions must be visible and attractive. This also implies a rigorous selection process at the entrance to different stages of a course of study, and, every year, at the different levels of the program. Universities that have the possibility of selecting their students have an advantage compared with those that cannot, as their public authorities force them to accept as undergraduates all those students who have successfully finished high school; and soon, in many countries, all those who have completed Bachelor's degrees to enter Master's programmes. It is therefore crucial that a selection process takes place as early as possible to prevent mediocre students from bringing down the general level.

Secure the Necessary Financial Resources   Last but not least, another topic of growing importance is the funding issue. Even if the new university will be better positioned, therefore, better focused, it will need continuously more financial resources to develop research infrastructure and to offer better learning opportunities, in particular at the postgraduate level. For European universities, this implies trying to obtain more from traditional sources, that is State funding, and from third party organizations, in particular research funding agencies, foundations and donors (sponsors). In all these

cases, universities are totally dependant on decisions made externally by political bodies or organizations; they can however try to influence positively these decisions by lobbying all these organizations, proving to them that they deserve their increased support.

The real challenge for universities is to raise additional resources directly from new sources, basically on a contractual basis. Universities can fundamentally sell both their teaching (study fees) and research services (research contracts and proceeds from intellectual property rights). Finally, they can try to accumulate assets and benefit from their proceeds. European research universities are strongly encouraged to consider these new ways to increase their financial resources, but they have to be aware that it will be quite difficult and that some sources may even partly endanger traditional resources.

The introduction or increase of study fees is certainly the most promising way to increase revenues. However, there is a strong resistance to fees, possibly with a few exceptions in Spain and England. My belief is that the resistance to fees is due to confusion between higher education as a "public responsibility" and as a "public good". Governments can decide politically that higher education and research should be a public responsibility, a consequence of which might be that it should be provided free. However, higher education and research are certainly not a public good according to the economic definition of the word, even if they produce external benefits for all those who did not attend a higher education institution. The consequences of this confusion are far reaching, in particular giving up the idea of raising fees in order to invite students to contribute directly to the funding of their studies. First, the payment of fees by students contributes to a better allocation of resources (on both the supply and demand sides of higher education). Second, free access to higher education produces a regressive impact on the income distribution of a country because, despite all the efforts made, the proportion of students from low-income families studying in higher education institutions is still very low. The fact that this low-income group pays also taxes, even if these are modest amounts, means that the members of this group are subsidizing the studies of better-off children. Last but not least, raising study fees can provide significant additional financial resources. These arguments are clearly in favour of raising fees. However, this is advisable only if two necessary conditions are met: first, ensuring that fees do not become a barrier to entry for low-income groups, it is necessary to develop simultaneously a generous system of grants and/or loans; second, many European universities fear － with good reason － that governments could use this opportunity to reduce simultaneously their own funding to universities, which would be quite damaging considering that universities are already underfinanced.

European universities have become quite active in contract research, and this approach is likely to be adopted more and more frequently. However, progress could still be made with exploitation of the intellectual property rights. One should however be aware that a proactive policy on this matter could only provide a couple of percentage points more revenue and could also affect negatively the creativity of researchers if the system became too bureaucratic and protective.

Probably the biggest difference between American and European universities is the quasi-total absence of endowment funds in the latter. In our view, there are two main reasons for this. The first reason is that there is in general no — or only weak — tax incentives for individuals to make donations to universities or for funding a research project as these are not, or only partially, deductible from their income. Obviously, universities should lobby their national government, and in particular Ministries of Finance, to change the fiscal laws in order to make these donations tax deductible. This change is however hard to obtain as European universities are mostly public, which means that they are already a burden on the expenditure side of the public budget. Therefore, Ministers of finance are not at all keen to accept additional expenditure in the tax laws. The second reason is that there is in European universities practically no culture of alumni from whom one could ask for contributions to finance specific projects.

Conclusion

This description of the deep changes taking place around the world, and in Europe in particular, and of the most important challenges facing European research intensive universities shows hopefully that research intensive universities will have to be much more pro-active in adapting to the changing environment and responding to new needs and opportunities, while simultaneously improving the way they fulfil their responsibility towards society. This is a challenge for all staff members, but the leaders will have to take a much more decisive stance, in contributing to setting up more efficient decision structures and processes, thinking strategically, using modern management tools and making decisions. This is the condition for them to keep the leading position they have enjoyed for centuries as the place where all researchers are trained and where most of the basic scientific discoveries are made.

References[1]

Barcelona European Council (2002), *Presidency Conclusions*. http://ue.eu.int/newsroom/makeFrame. asp?MAX=&BID=76&DID=69871&LANG=1&File=/pressData/en/ec/69871.pdf&Picture=0

Berlin Communiqué (2003). http://www.bologna-bergen2005.no/

Bologna declaration (1999). http://www.bologna-bergen2005.no/PDF/00-Main_doc/990719BOLOG NA_DECLARATION.PDF

Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions (2000). *Towards a European research area-*

---

[1] The internet links are current as of April 2004

COM (2000) 6-18 January 2000.http://europa.eu.int/eur-lex/en/com/cnc/2000/com2000_0006en01.pdf.

Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions (2000). *Making a reality of The European Research Area: Guidelines for EU research activities (2002-2006)* - COM (2000) 612, October 4, 2000. http://europa.eu.int/eur-lex/en/com/cnc/2000/com2000_0612en01.pdf.

Council of Europe/UNESCO (1997). *Convention on the recognition of qualifications concerning higher education in the European Region*. http://conventions.coe.int/Treaty/EN/cadreprincipal. htm.

Council of Head of States of countries member of the European Union (2000). http://europa. eu.int/comm/lisbon_strategy/pdf/79_en.pdf.

ECTS (2003). http://europa.eu.int/comm/education/socrates/ects.html.

European Commission (2002a*). More Research for Europe, Towards 3 % of GDP*. http://europa.eu.int/ comm/research/era/pdf/com3percent_en.pdf.

European Commission (2002b). *Communication: The European Research Area: Providing New Momentum. Strengthening—Reorienting—Opening up new perspectives,* Brussels: Commission of European Communities, October 16, 2002. http://europa.eu.int/comm/research/era/pdf/era-newmomentum_en.pdf.

European Commission (2003). *Investing efficiently in education and training: an imperative for Europe*, Com 779. http://europa.eu.int/eur-lex/en/com/cnc/2002/com2002_0779en01.pdf.

European Commission (2003a). *Communication Investing in research: an action plan for Europe.* http://europa.eu.int/comm/research/era/3pct/pdf/action-plan.pdf.

European Commission (2003b). Communication: *The role of the universities in the Europe of knowledge*, Brussels: Commission of European Communities, February 5, 2003. http://europa.eu.int/eur-lex/en/com/cnc/2003/com2003_0058en01.pdf.

European Science Foundation (ESF) (2003). Report of a High Level Working Group, *New structures for the support of high-quality research in Europe,* Strasbourg.

European Union (2002). *Sixth Framework program 2002-2006*. http://europa.eu.int/comm/research /fp6/index_en.html.

European University Association (2003). *Graz declaration.* www.eua.be

Grin, J.-F., Harayama, Y. & Weber, L. (2001). "Responsiveness, Responsibility and Accountability in Swiss University Governance", in A. Arimoto (ed), *University Reforms and Academic Governance*, RIHE International Publication Series No. 7, Hiroshima, pp. 55-101.

Hirsch, W. Z. & Weber, L. E. (eds.) (2001) "*Governance in Higher Education"*, Economica, Paris.

Lisbon European Council (2000). *Presidency conclusions.* http://ue.eu.int/Newsroom/LoadDoc.asp? BID=76&DID=60917&from=&LANG=1.

Middlehurst, R. (2003). *Quality Assurance Implications of New Forms of Higher Education. European Network for Quality Assurance in Higher Education (ENQA),* Occasional Paper No. 3, Observatory Reports, Helsinki. http://www.obhe.ac.uk/products/reports/.

Prague Communiqué (2003). http://www.bologna-bergen2005.no/PDF/00-Main_doc/010519 PRAGUE_COMMUNIQUE.PDF

Reichert, S. & Tauch, Ch. (2003). *Trend 2003; Progress toward the European Higher Education Area; Bologna four years after: Steps toward sustainable reform of higher education in Europe*, EUA and European Commission, Brussels. http://www.bologna-bergen2005.no/PDF/00-Main_doc/ 0307TRENDS_III.PDF

Rhodes, F. (2004). "Reinventing the University", in (chap. 1) Weber & Duderstadt (eds), *Reinventing the Research University,* Economica, Paris, pp. 3-14.

Sorbonne Declaration (1998). *Joint declaration on harmonisation of the architecture of the European Higher Education System.* http://www.bologna-bergen2005.no/PDF/00-Main_doc/9805 25SORBONNE_DECLARATION.PDF.

Tauch, Ch. & Rauhvargers, A. (2002). *Survey on Master Degrees and Joint Degrees in Europe*. EUA, Genève, September 2002. http://www.bologna-bergen2005.no/PDF/02-EUA/0209SURVEY _MASTER_JOINT_DEGREES.PDF

The Council of Europe*: 800 million Europeans* (2003). Council of Europe, Strasbourg.

Weber, L. (2001). "Critical University Decisions and their Appropriate Makers: Some Lessons from the Economic Theory of Federalism", in Hirsch & Weber (eds.), *Governance in Higher Education*, The University in a State of Flux, Economica, Paris pp. 79-93.

Weber, L. (2004). "Financing the Research University: A European Perspective" in (chap. 13) Weber & Duderstadt (eds.). *Reinventing the Research University,* Economica, Paris, pp. 179-196.

Weber, L. & Duderstadt, J. (2004). "Challenges and Possible Strategies for Research Universities in Europe and the United States", in (chap. 17) Weber & Duderstadt (eds), *Reinventing the Research University,* Economica, Paris, pp. 239-254.

Weber, L. & Zgaga, P. (2004). "Reinventing the European Higher Education and Research Sector: the Challenges for Research Universities", in (chap. 3) Weber & Duderstadt (eds), *Reinventing the Research University,* Economica, Paris, pp. 29-50.

Zgaga, P. (2003). *Bologna Process between Prague and Berlin. Report to the Ministers of Education of the signatory countries*. Report commissioned by the Follow-up Group of the Bologna Process, September, Berlin. http://www.bologna-bergen2005.no/PDF/00-Main_doc/0309 ZGAGA.PDF.