Whither European Higher Education?

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Ladies and Gentlemen,

He was born and raised in the Netherlands, he studied in Paris, went for a year to London, where he met and impressed the king, moved back to the Netherlands, to spend two years in Löwen; then for another year back to London, followed by three years of research work in Italy. At age forty he finally got his Ph.D. at the University of Turin. After five postdoctoral years in Cambridge, England, he finally moved to Basel. At that time he was 45 years old and one of Europe’s most famous thinkers. In the following years he was offered the most prestigious jobs in England, France, Spain, Germany and Italy but he did not take any of them.

On July 10, 1517 Erasmus wrote to his dearest friend Thomas Morus: *I have not decided yet, which place of residence I should choose. I do not like Spain, even if the Cardinal of Toledo has made me an offer for the second time. In Germany I could not live, because there is much shouting and no salary, there. In England I am afraid of all the unrest and I hate the subservience […]*. He also says something about the conditions in his own country: I skip it here. But he concludes his letter with the sentence: *In any case I intend to stick to my goal: to further true learnedness as much as I can.*

As you know, Erasmus and Thomas Morus fought with all their strength against the upcoming schism — always with theological arguments, always as if both of them were not willing to give up the bracket that up to then kept Europe together: the *unam sanctam ecclesiam*. They did not succeed: their bracket — the catholic church — was rusty; it had not been able to adjust to the major developments of the society of those days. Their globalized world was destroyed by reformation and counterreformation. Separatism, provincialism, parochialism and later nationalism followed. The “globalization” of Europe fell apart at the very moment, when Europe discovered the rest of the globe and started to take possession of it.

Today we live in a period of a new globalization: this time it involves a big part of the whole globe and it is driven by economic and technological developments. Its major characteristics are the globalization of capital, the globalization of the workforce and the globalization of the markets. And it all rests on the pillars of the new information technology and the
enormous accumulation of globally available knowledge. Obviously the educational system and education itself have to react to such major changes – no, they should even anticipate the developments and substantially contribute to determine their future direction. Education means shaping the new generation and therefore it should lay the basis for future innovations in the most general sense.

In this discussion I will focus on higher education, on the major challenges it is facing and on the present trends of how to cope with them. For obvious reasons I will direct the spotlight on Universities of engineering and natural sciences.

I am well aware of the fact, that I am presenting my thoughts at an institution which so far has played a leading role in the process of renovation of our university system, in house as well as at the national and at the European level. In other words: much of what I am going to say will sound familiar to you. This is actually what I am hoping for: it would be one more proof of the kind of unité de doctrine that over the last few years has evolved between some of the most ambitious European Institutions of Higher Education.

The new challenges

Three observations are at the basis of what I am going to say:

1. The globalization of the economy and of our society has created the need for academics with a different kind of education. Many of the problems of our economy have a global aspect to them, obviously, but also many of the big challenges our societies are facing today are of global nature. Just think of resources, energy, ecology, population growth, the food situation, health care and medical research, security or cultural incompatibilities. This means that we need highly educated people who are able to analyze chances and difficulties in this new globalized context, who assess them and who develop corresponding new visions and solutions. People who speak foreign languages, who know how to move with the greatest ease in foreign cultures and environments. These people should however still have a solid education in what is their core competence – without it they will not be able to compete in a globalized labor market.

2. So far our European universities are mainly public institutions funded essentially by regional or national governments, they have enjoyed some kind of a monopoly in what they were doing. All of a sudden they are exposed to the competition with other, mainly American Institutions of higher education. These set up branch schools in Europe or elsewhere or they conclude a deal for far reaching collaboration with local universities. MIT, to name an example, has made a deal for collaboration with NTU in Singapore, which brings earnings in the order of a two digit number of millions of dollars – to the American institution, of course. More recently MIT has concluded a similar deal with Cambridge University in the UK and here, too, the national government is supporting the collaboration with extra funding by tens of millions of dollars. Many other examples could be quoted. But this is only one side of the coin. Recently a delegation from China was visiting ETH. Their goal: to invite ETH to open a branch institution somewhere near Shanghai. (This delegation probably showed up in Delft, as well).

3. The sole responsibility of the state for the educational system has a long tradition in most European countries. This concept may be traced back as far as into the middle of the 13th century, when the emperor Frederick II founded the University of Naples, with the argument, that it was crucial to have well educated people in his kingdom of Sicily, people who did not have to go to Bologna or to Paris to get their education. More recently – and this is the origin of our present day situation – the Enlightenment argued, that it was in the vital interest of any democratic society to have well educated and critically thinking citizens. In his famous “Cinq Mémoires sur l'instruction publique” Condorcet [C] writes: « Le but de l'instruction n'est pas de faire admirer aux hommes une législation toute faite mais de les rendre capables de l'apprécier et de la corriger ». (The goal of education is not to make people admire our laws, established once and for all, but to enable them to appreciate them and to change them).

I do not want to go further into the many good reasons that lead 19th century Europe to the establishment of a public school system, including the university sector, but I would like to stress that in my view most of the reasons given then should still have a great weight in today's discussion.

In a discussion in which the sole responsibility of the state for higher education is not taken for granted anymore for the simple reason that it will not be able any longer to finance higher education all alone. Higher education at a uniformly high level for an ever growing part of the population. Now the hope is for a higher degree of cost sharing by the students, the hope is for a much stronger financial commitment of private industry and individual sponsors and the hope is for higher efficiency due to more competition and better coordination. More competition and better coordination should and could be a consequence of a higher degree of autonomy for the universities and of a much stronger internationalization
of higher education.
To summarize: Some of the major challenges to cope with are the need of a new profile for university graduates in the light of globalization, the rising competition with other educational institutions from within Europe and from overseas and the declining availability of public funds.

The Bologna Declaration

An important step towards dealing with these challenges has certainly been the "Bologna Declaration", signed 2½ years ago by 29 European ministers of education. At first sight, the theme there is not so much an internationalization of higher education but the construction of a European space of higher education. But after all, the political objective of the declaration is to create a system that produces graduates who stand their ground in an international labor market and that operates successfully in a global competition of educational systems.

The Bologna Declaration proposes six concrete measures to be taken:
1. To adopt a system of easily readable and comparable degrees
2. To organize University education in cycles: an undergraduate (bachelor) cycle and a graduate cycle leading to a master and/or a doctorate degree.
3. To establish a system of credits for learning achievements as a proper means of promoting the most widespread student mobility.
4. To eliminate obstacles to free movement.
5. To promote European co-operation in quality assurance.
6. To further the necessary European dimensions in higher education, particularly with regards to curricular development, inter-institutional co-operation, mobility schemes and integrated programs of study, training and research.

Some universities welcomed this declaration right away, because much of what was proposed had already been realized there. Most institutions however reacted skeptically, because the project had been launched and signed by politicians, in most countries without a prior consultation with the academic side. The Association of European Technical Research Universities, CESAEER, of which TUDelft is one of the leading members, reacted quickly and in a pragmatic and constructive way: It said: yes, but ... Its considerations became part of an answer to the Bologna declaration given by the European Universities in Salamanca in March of last year.
- Yes, the universities said, we are willing to build our own future in a new European context. But we want to be the process owners.
- To achieve the goals we need more competition. Competition internationally is possible only if there is also more competition at a national level.
- To be able to compete and to be successful in cooperation, universities need more autonomy at the operational level and adequate financial means.
- Autonomy in this context means to be responsible for:
  - Strategic planning, financial planning
  - Hiring of collaborators, especially of the professoriate
  - Choice of partners, nationally and internationally
  - Definition of research projects and of study programs
  - Setting admission rules for the students

It probably came as a surprise to many, that after two years time, universities in most European countries reacted positively to the Bologna program. Today one might even dare a prediction, that in most places some or most of the concrete measures proposed at Bologna will be realized in due time.

It is much less clear to me, whether this suffices to reach the actual goals of the Bologna declaration. That is to say to build a European Space of Higher Education with true collaboration across national boundaries, with a high degree of student mobility, a European educational systems that is attractive for students from overseas and that produces graduates well prepared to meet the global challenges and to succeed in the global labor market.

What else is needed?

Inevitably we come to the question, what else is needed?

Mobility

The first notions to test are mobility and internationalization of the educational system. In the Bologna Declaration neither one of them is really scrutinized, they appear as values per se. Maybe one looks at the USA and admires the performance of its leading institutions, sees the exemplary achievements, first of all in research, clearly, but then also in education. One knows of course, that American students are highly mobile, that is to say, within the boundaries of their own, enormous country at least. And one notes that in the Anglo-Saxon world the globalisation of the educational system has already reached a high level and that it is progressing at an ever increasing speed. Is the Bologna process nothing but an attempt to copy the American system?
This kind of an interpretation certainly misses the point. The innovations proposed in the Bologna declaration do represent a unique chance for a deep and lasting rethink of our higher education system and a chance for a profound reform. A reform that by the way has been under way long before the Bologna meeting, in many places, including Delft. A reform that doesn’t just consist in a reshuffling of traditional courses but that often builds on new contents, new teaching and learning methods and new profiles for the graduates. By now a large number of European universities have taken up the challenge and in many countries the university landscape looks like a big construction site.

The division of the study programs into cycles does not just offer the students a chance to change their place of study, they could also change the direction of their studies after the completion of the Bachelor cycle. Somebody with a Bachelor in Engineering may enroll in a Master program for Technology Management. Or they might, after having reached the Bachelor level, spend a year or two with practical work and then come back for a master program. At the Bachelor level, that is for the first three years of study, most European universities have a student body that is mainly local. That means that e.g. 80% of the students come from a place not further away than 50 km. This could change drastically at the master level. After three years of studies, that is at the moment of entry into a master program, the students are more mature, they know much better what they want and they are able to choose their place of study more according to academic criteria and less just as function of the distance from mother’s washing machine.

For the universities the system allows for the possibility to try to attract the very best students from all over the world. This creates competition and automatically a certain classification of the institutions takes place. However it has to be said and it has to be stressed, that a necessary condition for this to work is the right of the individual universities to define their own admission rules. A universal rule fixed by the government and possibly enlarged with international treaties completely destroy the competition and makes life difficult for those who want to strive for quality.

Sometimes it is pointed out by students that such a rule which gives a high autonomy to every single university would be an obstacle to mobility rather than promote it. In reality the opposite will be true. The proposed mechanism will allow the various institutions to gain a much sharper profile and the student who wants to move to another place finds it much easier to determine, which one fits best his needs and his potentials. Nobody could honestly claim that it makes sense for a student to enter a program which he is not able to cope with. Many frustrated people would be a direct consequence of indiscriminate admission to master programs.

**Networks**

Does that mean that the wonderful vision of some of our politicians, the vision of a completely open European Area of Higher Education, is nothing but a dream? The Area where you acquire a credit point in one place and have it recognized by any other place, where you get a bachelor degree from one institution and have free entry to any master program in any other institution?

Yes, indeed, this is a dream, admittedly a beautiful one but also a totally unrealistic. This would require a degree of leveling of egalitarianism, that nobody really wants. This idea is based on the assumption of a kind of uniformity in quality and in demands which one could not even imagine let alone wish for. So, has it all gone up in smoke, the European Area of Higher Education? I don’t think so, only it will not look that simple and grandiose, not even ten years from now. Instead we will have a large number of networks, smaller and larger ones, networks of institutions that have carried the harmonization among themselves to a point, where it becomes very easy for the students to move within this network. A cross-over from one network to another one will not become impossible, of course not, but it will just not be as automatic anymore.

Many such networks are already under construction, some of them are even operational. Among the few ones I value dearly is the IDEA Leage, IDEA being an acronym for its four member institutions: Imperial college, Delft Technical University, ETH Zurich and Aachen Rheinisch Westfälische Hochschule. This network is a good example for how internationalization and globalization will work in the educational sector. No mergers, no friendly or unfriendly takeovers but true collaboration between the four equally ambitious partners towards the common goal: highest quality of their teaching and of their educational programs, scientific excellence and social relevance of their research, and high expectation in the quality of the students. They work towards harmonization of their curricula while still carefully observing the cultural differences. Competition persists, e.g. competing for the best faculty has proven to be quite refreshing. Many of you know that within this network there are common working groups on almost any field that is being taught at all four institutions.

There has also been a lot of work to define a set of quality requirements, all four institutions can subscribe to. A system of quality management, quality assessment and quality improvement is being developed that can
be applied in similar ways at all four partner institutions. Needless to say
that quality assurance is just another cornerstone in the process of
internationalization.

I am convinced that a network like this one will not only exploit the interna-
tional dimension of teaching and research for the benefit of its students
and staff, that it not only will share ideas on the solution of structural
problems, but that it will soon find ways to go jointly after additional funding,
be it from the EU or from private side and more generally, to exert more
influence on governments, on EU bodies and on industry. The network will
have a chance to organize jointly its presence overseas, especially its
efforts to attract students from other continents.

Two other networks have to be mentioned at this point: first, UNITECH
international, which brings together eight leading technical universities and
about 25 international companies with the goal to offer to a selected group
of engineering students a very special additional education in manage-
ment skills, needed to qualify for a job in a leading position in an big,
internationally acting company. And second, a group of ten technical
universities from Europe and from the USA, including MIT, Georgia Tech
and Carnegie Mellon University joined together in the project SPINE.
SPINE stands for Successful Practices in Engineering Education and it is
a benchmarking exercise to compare and to appreciate methods and
practices in all aspect of teaching.

Needless to say that both TU Delft and ETH are leading members of all
three networks just described.

Competition
I have argued that networks, collaboration and common high standards in
quality control are essential conditions for a successful move towards
internationalization of university education. This however is only one side
of the coin. On the other side we find the need for competition, for autonomy
and for fair financing. Let me explain why.

Higher education has expanded since World War II in almost every coun-
try in the world. Just after the war most European countries maintained an
elite higher education system with less than 5% of a cohort attending a
tertiary institution. In the USA that figure was at about 30%. By the 1970 in
many European nations that figure had risen to above 15%, in Sweden it
was 24%, in France 17%, the USA had just about reached the 50% threshold.
By 1990 most European countries enrolled more than 30% of
an age group. In the USA the figure had more or less stabilized. Admittedly,
in Switzerland even today the figure is still at an all European low of 17%,

with only 9% reaching a university diploma, but the general trend is to
large percentages [M].

The old Humboldt ideal of a university education is based on the concept
of teaching based on original and high level research; actually teaching
science has to be doing scientific inquiry (Überhaupt lässt sich Wissen-
schaft als Wissenschaft nicht wahrhaft vortragen, ohne jedesmal
selbstthätig aufzufassen, und es ware unbegreiflich, wenn man nicht hier
sogar oft, auf Entdeckungen stossen solle [H]). This is very expensive, as
we all know, too expensive even for rich nations to offer it without restriction
to a large fraction of the population. Is Humboldt idea dead, as some
people claim?

I don’t think so, I am actually convinced that the tight link between re-
search and education is essential for a high quality tertiary education. But
I am equally convinced, that this model has a chance to survive the
challenges of today and of tomorrow only if we give up the notion, that all
our universities are or should be world leading research institutions.
If there are big discrepancies between the claim to fame in high level re-
search and the actual capabilities to perform then it is clearly the learning
environment that suffers. We must allow for a much further reaching
differentiation between our institutions, be it at the level of individual
laboratories or departments or universities. It is true that we need some
top scientists who are offered a very generous research budget and a
large staff of collaborators, and we do have students who should be
educated by such researchers. But not 30% of a cohort and certainly not
50%. Top researchers are very often excellent teachers, but primarily for
the highly talented and very independently working student. For slow
learners and for people who need everything carefully explained they don’t
have the patience. Hence for many students it would be much more
gratifying to be at an institution, where the stile of teaching is a bit different,
adapted to their needs. The research at those places would not necessarily
have to be of lower quality, but it would be less costly, it could still make an
important contribution to the progress of human knowledge, but maybe it
would not lead to so many Nobel Prices.

How to reach such a differentiation? I think the best approach is to allow
for more and real competition. For example in the sense that public
universities would be guaranteed a basic budget, that allows for offering
excellent teaching and for doing research at a high level of quality but at a
moderate level of cost. Anything that goes beyond this would have to be
acquired on a project basis from funding agencies or from private spon-
sors. And this additional money should come with a certain overhead, that
would allow the university to make further investments in the infrastructure and in the teaching. In the USA on the average overhead is 60% for private universities and 47% for public ones. And the public money should be assigned on the basis of the merits of the projects. Top down research planning might be justified in some special cases, in general however it leads to a lot of red tape and to less innovative research. In the USA the so-called academic earmarking of research funds has been growing in a frightening way: in 1980 a total of 7 federal projects where politically earmarked involving funds of 11 million $, in 1992 there were 500 such project with a total of over 700 million research money. This could become a real threat to the heart of the peer review process.

Isn’t this kind of a system already in place in many European countries? I think yes, in nuce, in an embryonic state, but not at a level yet, where it could really lead to a true differentiation. In that respect, my own institution is an extreme case: we get only about 15% of our budget on a competitive basis. In some countries the differentiation has been institutionalised: in Germany there are the Max Planck Institutes which have a lot of money and which are very little involved in teaching. On the other hand there are the universities that find it very hard to get additional funds. In France you have the grandes écoles which makes the system un-flexible and you have the CNRS, that alienates many gifted young people from the teaching process.

More competition for the universities: in Salamanca they have declared to be ready for it. But it will work only, if the universities are being granted a high degree of autonomy: autonomy in choosing their faculty, in selecting their students – especially at the masters level – and in choosing their partners. And full autonomy at the operational level. This brings me back to the small networks: small networks of partners with similar ideas, goals and ambitions are exactly what it takes to make the institutions fit for the increased competition. And it brings me back to another point I have made before: Highest standards in quality control, in quality promotion are indispensable if you want to have a chance in a competitive environment. And on the other hand: competition, understood correctly, is one of the best promoters of quality.

Some of you might react by saying: but isn’t this all very elitist? Well, yes, it is elitist, if you interpret the word elitist in the right way. After all, universities are about making the best possible use of the intellectual capital, that your nation has. That means ideally promoting everybody according to his capacities, to his motivation, to his gifts, everybody, that is students, teachers and researchers alike. Equal opportunities and equal chances for everybody, independently of birth, sex and personal wealth, this is what the thinkers of the enlightenment had in mind when they spoke of the ideal of equality. This is still an important objective, but it is not in contradiction with the kind of competition discussed before.

Finances
One of the major arguments for increasing competition is the more efficient use of funds. This statement should not take our minds off the fact, that European Higher Education will need more financial support, should it be able to live up to the high expectations in its quality of teaching and research and should it have the capacity to absorb the ever growing number of students. The times when a large fraction of the graduates from universities became civil servants are long gone by. Hence it is straightforward to conclude, that in the future besides the government other players will have to help to bear the burden. Much would have to be said about a substantial contribution from the private and from the industrial side. Even more has to be discussed about a cost-sharing with the student himself. It is not that I want to enter into details. It is clear that we have to rethink many of our traditional notions. There is just one aspect I would like to emphasize. Over the years most of our government have learnt, that they should finance the universities and still grant them their autonomy. Control has to happen in the form of accountability. It is true that in most countries even today one is still trying to find a satisfactory realization of this simple idea.

If now private sponsors begin to take part in the financing of higher education, then they have to go through the same learning process. “Who pays, commands”, wer zahlt, befiehlt, is a bad principle in this context. It should rather read: Pay, where you trust. In a university context the most productive order of things is: see where you are willing to trust, then pay, and in the end check. To maintain a high level of independence for the universities will ultimately also bring benefits for the industry in the same way it does for the politics: the education of independent and critical thinkers and the ability to function as a trustworthy and unbiased think-tank are crucial assets of a university tomorrow as much as today.

Americanisation

Many people suspect that the unavoidable path of European Higher Education will lead to a step by step adaptation of the American system and much of what I have been saying so far could make you think that this is my view, too. Let me hasten to point out that you should not rush to this conclusion. As much as I admire and love some aspects of the American
higher education I would never want the European system to move anywhere near it. Let me just mention two facts.

It is true that in the states over 50% of a cohort go to college and over 25% have a tertiary level degree. But that came about the cost of a near collapse of the classical academic disciplines on one side with an overproduction of PH D.s in many areas on the other side. Without going into the details let me just give one amazing example [M]:
- In 1970 in all of the US there were about 25'000 BA's in Mathematics graduating, while there were 1'600 BA's in the fields Parks, Recreation, Leisure, Fitness.
- In 1997 there were roughly half as many BA's in Mathematics as in 1970, namely 12'820, whereas the number of BA's in Parks, Recreation, Leisure, Fitness had grown by a factor of 10 (16'000).
- Even at the 100 so called Research Universities (Carnegie Classification) – these are the Institutions that are usually known in Europe – even at those places only about 50% of the students graduate in the Liberal Arts.

An important consequence of this development is the enormous variety of quality in a system that consists in almost 4'000 tertiary educational institutions (3'941 according to the statistics of the Carnegie Foundation). Of course, some of the top universities are better than anything you could find elsewhere in the world. But the prize is a large number of institutions, whose contribution to a high quality education is more than questionable. This is of course a consequence of an almost unlimited competition for more and more students, regardless their qualifications.

This shows that there have to be limits to competition, too. We do want a higher degree of differentiation between our institutions of higher learning in Europe, more than what we have for example in Germany with the system of universities on one side and universities of applied sciences, the Fachhochschulen, on the other side. But we would never want to go below a certain level of quality of teachers, students and graduates.

We do not want the academic success of one institution at the price of the intellectual impoverishment of some others. And as we go global, as we try to attract the best students from all over the world to come and enroll in our Masters Courses we want to be careful not to generate a brain drain that would be devastating for some poor parts of Europe or of some less developed countries elsewhere in the world. We have seen the losses for Europe after WW II or the intellectual bleeding to death of Russia after 1989. The Bologna process will surely open up new positive perspectives to many gifted young people in Eastern Europe. But it clearly is in the best interest of all of Europe to keep the unavoidable brain drain from east to west within very narrow limits. We have to find ways and means to create a form of globalization of higher education that has only winners and no losers.

**Conclusion**

I have argued that the future development of European higher education may well go along a path as sketched in the Bologna declaration, but that it should be driven by joint efforts and intense collaboration in networks, by an uncompromising strive for quality, by more competition given high autonomy and fair financing. Building a European space of higher education is a wonderful challenge, but our efforts for internationalization should not stop at Europe's borders. We might want to make it a European trade mark that for us internationalization does not mean intellectual exploitation of the have-nots.

I am not convinced that the present trend towards globalization of our economic system will last for long in all its ramifications. But if we succeed to globalize education in the way discussed, without giving up our own cultural riches, then I am quite optimistic, that a European and to some extent even a global intellectual and scientific culture may come to be not unlike what we had in Europe at the times of Erasmus. We might be able to forge a new bracket that holds Europe together. But with Erasmus in any case we intend to stick to our goal: to further true learnedness as much as we can.

**References**

