

Bologna and the “Idea of University”: Internationality, Quality

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Bologna and the founding of its university in 1088 was the starting point of a localized, structured academic education. Bologna, however, is not the cradle of the modern university, which rather was invented by *Wilhelm von Humboldt* in Berlin in 1809/10. This new “idea of university” (Karl Jaspers) centered around the creation of new knowledge, based upon scientific research. Science thus became the central mission of university.

This new concept – mirrored in the unity of research and teaching – formed the basis of sustainable scientific invention and innovation, and finally yielded economic wealth in those countries that have applied this principle ever since.

Bologna has come back into our minds recently: The creation of a common European Higher Education Area on certain standards and organizational forms has become the political goal in the “Bologna Declaration” of 1999. In my opinion, the “Bologna-Process” within Europe will be successful if *international quality standards* are the key commitments along this way. The basic principle is *competition*.

Regarding *internationality*, the German Alexander von Humboldt Foundation has proven to be a unique factor of European integration, too. I am proud to say that Technical University of Munich has established a very special relation to the fellows of this foundation. We host now for many years a constantly high number of Humboldt fellows and Prize winners. As you can see in this diagram, TUM ranks second among all German universities according to the number of fellows hosted between the years 1998 to 2002.

Humboldt Fellows at German Universities (1998-2002)

<i>Rank</i>	<i>German University</i>	<i>Number of Faculty (Professors)</i>	<i>Humboldt Fellows</i>	<i>Fellow per Faculty</i>
1	Universität München	810	181	0,22
2	Technische Universität München	405	170	0,42
3	Freie Universität Berlin	490	169	0,34
4	Universität Heidelberg	493	159	0,32
5	Universität Bonn	530	144	0,27
...

(cited from: Alexander von Humboldt Foundation; university websites)



This number illustrates the great contribution our numerous Humboldt fellows have accomplished for the development of TUM and other German universities. We appreciate the superb work in terms of innovation and scientific progress. We also should be aware that our Humboldt fellows not only create outstanding scientific value. They also represent the spearhead of internationalization. And they have frequently proven to be our most efficient ambassadors in their home countries. In particular, the European unification and integration process was supported by our former Humboldtians in manifold ways. The development process of a common European university culture is supported by the mobility of our best talents. Therefore, the topic of today's meeting, the "Bologna Process", gives us an opportunity to exchange our thoughts and experiences.



A Retrospective – German Universities and the Bologna Declaration

The “Bologna Declaration”, which in the meantime has been signed by 40 European states, has set a milestone towards achieving the European Higher Education Area (EHEA). The “Bologna Process” has provided enormous energy and visibility for an agenda that will increase the cultural and linguistic diversity of European higher education institutions by enabling students to move freely among those institutions and bringing students from all around the world to Europe.

Although the “Bologna Process” is clearly government driven, it nevertheless also reflects the insight of the higher education institutions themselves that European universities need to become more international, they need to become more compatible on the international

education market, and last but not least, they need to adopt to the challenges of the modern world as such, in a time, where money from the states becomes scarce, where the mobility of students world wide increases more and more, and where the demographic situation in Europe calls for excellent international students, to keep up its scientific and thus economic standard.

Germany will face a dramatic shrinkage of population after the middle of the next decade. Our economic strength can only be rescued if we further improve our scientific and technical performance, a goal we can only reach by an additional number of excellent foreign students in our universities. They will only join us, however, if we provide excellent study and research conditions. If we don't, we shall loose leadership which we have maintained in quite a number of science- and technology-driven fields.

The situation in European countries may be similar. However, I am asked to comment on the German situation. Here, the situation seems to be more complicated than elsewhere.

Independent from the legal federal framework regarding regulation of universities, the stronghold of the cultural supremacy within the Länder-decision-making process prevails. Germany is a federal republic shared by 16 states, the so-called Länder, having their own parliaments and governments. The Länder have full responsibility for their cultural affairs including universities. As a consequence, differently from other countries, the decision of the Bachelor-Master programme structure lies in the hands of Länder governments, while the implementation has to be performed by the universities themselves.

In Germany, the political necessity for adopting the Bologna criteria may therefore have a strong impact on the national and, more so, on the Länder-specific political decision making process. It may even lead to the necessary and constantly demanded autonomy for the German (Bavarian) universities from the state governments. It may also help to accelerate other reform processes, like professional management structures, fundraising activities, or stronger international commitments (such as the recently chartered TUM branch in Singapore).

By the way, the insight of the importance of autonomy is not new. The intellectual founder of the modern German university was Wilhelm von Humboldt. He was a high ranking official in the Prussian government and, at the same time a philosopher and the founder of the new Berlin university in 1809 – the prototype of the contemporary “idea of university”. As you all know, he was the brother of “our” Alexander von Humboldt. He concluded in the year 1807:

**Wilhelm von Humboldt
(1767-1835)**

On the “New German University” (1807):

“Was man aber höhere wissenschaftliche Anstalten nennt, ist von aller Form im Staate losgemacht nichts anderes als das geistige Leben des Menschen... Der Staat möge sich bewusst sein, dass er in der Wissenschaft immer hinderlich ist, sobald er sich hineinmischt, dass die Sache an sich ohne ihn unendlich besser gehen würde.”



“What we consider to be the higher scientific institutions is, when released of all ties of the state, nothing else than the intellectual life of mankind... The state may be aware of the fact that he is always hindering science when he interferes and that science progresses endlessly better without him.”

The major topics of the “Bologna Process”, like the general acceptance of the Bachelor-Master structure concomitant with ECTS and Diploma-Supplements as well as modularisation of the course structure are by now widely accepted within the scientific community. Nevertheless there exist some uncertainties about the detailed implementation.

The positive effects of the “Bologna Process” are clearly seen by the German universities:

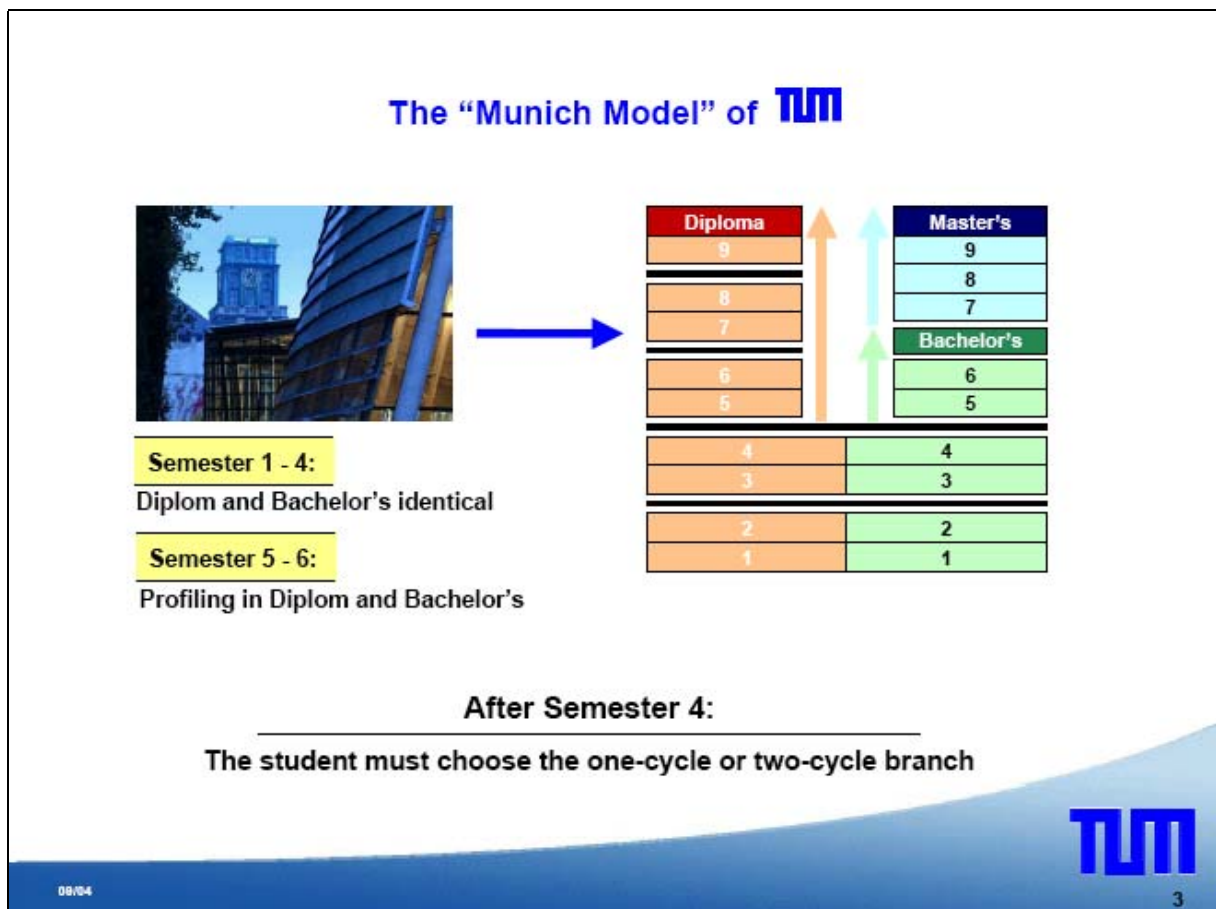
- Development of new patterns of programme
- Mobility and curricular flexibility for the students
- Internationalization

But one point is very clear for all the universities, and therefore the implementation process is not unquestioned: Reforms and structural changes cannot be accepted if well-established contents deteriorate under uniformity, and even less if it should lead to obliterate clear scientific profiles of study courses. By the way, the introduction of the new two-tier-course-structure must find sound resonance on the job market.

TUM and the so-called “Munich Model”

Let me briefly describe how our university started to introduce their first Bachelor’s and Master’s programmes. We started in the year 1998 - one year ahead of the European Ministers’ of Education “Bologna Declaration”. At that time, we were strongly committed to extend our efforts towards internationalization. Albeit our programmes were already excellent as compared to international standards, one key issue was: How can we attract more and better foreign students?

In the “Munich Model” frame, the first two years of studies are identical, comprising a theory-based study in the respective disciplines. Thereafter, students aiming at a Bachelor-degree continue with more applied courses (including general aspects like patent and labour right, management, etc.) and finish up with the Bachelor’s thesis. The other students continue to reach their diploma.



Since that time, more than 40 Bachelor’s and Master’s programmes have been started in parallel to diploma courses according to the “Munich Model”. Beyond that, special international Master courses (consecutive, but also continuous education courses) were designed. Within new study fields the two-tier system was implemented completely. Thus the “Munich Model” allowed us to adopt smoothly to the two-cycle degree system as outlined in the “Bologna Declaration”. We are now proud to say that, compared to the majority of German universities, this more

“evolutionary approach” towards the two-cycle scheme triggered a very effective transition and put us well ahead of the Bologna reform process in Germany. Now we are at the verge, in converting the whole course structure into the Bachelor-Master system.

Next Steps towards Bologna

At present we have reached the point of no return, concerning the implementation of the Bologna Process. Yet it has to be kept in mind that in the “Bologna Declaration” the implementation has to be fulfilled

“with full respect to the diversity of cultures, languages, national education systems and the university’s autonomy”.


I would like to stress and emphasize this point, especially since it corresponds to my understanding of Europe as the roof across cultural diversity.

Key Issues for German Universities in the ongoing adoption Process

Let me briefly outline some specific facts of the traditional German Higher Education System, since they are to be considered upon implementing the two-cycle course structure.

The German Higher Education System: “Universität” and “Fachhochschule”

The Complementary Character of 2 Types of Academic Institutions

	Universität	Fachhochschule
General Orientation	Fundamental Research Theoretical Understanding Methodology of Science & Engineering	Application of Knowledge, Industrial Development
Objective of Training	Ability to Invent	Ability to Apply
Industry's Expectation	Innovative Approaches, Advances in Methodology Creation of New Knowledge	Practical Application & Development Rapid Transfer of Knowledge



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Universities are traditionally focussed on fundamental research. *Universities* are the motors of scientific progress. Therefore, they have to maintain a strong theoretical and research-based orientation in all respects, both in research and teaching. The second type of higher education institutions, the so-called *Fachhochschulen* (who call themselves “Universities of Applied Sciences”) are clearly application-oriented, with a strong emphasision the professional character of their study programmes. The *Fachhochschulen* have become an important part of the German higher education concept.

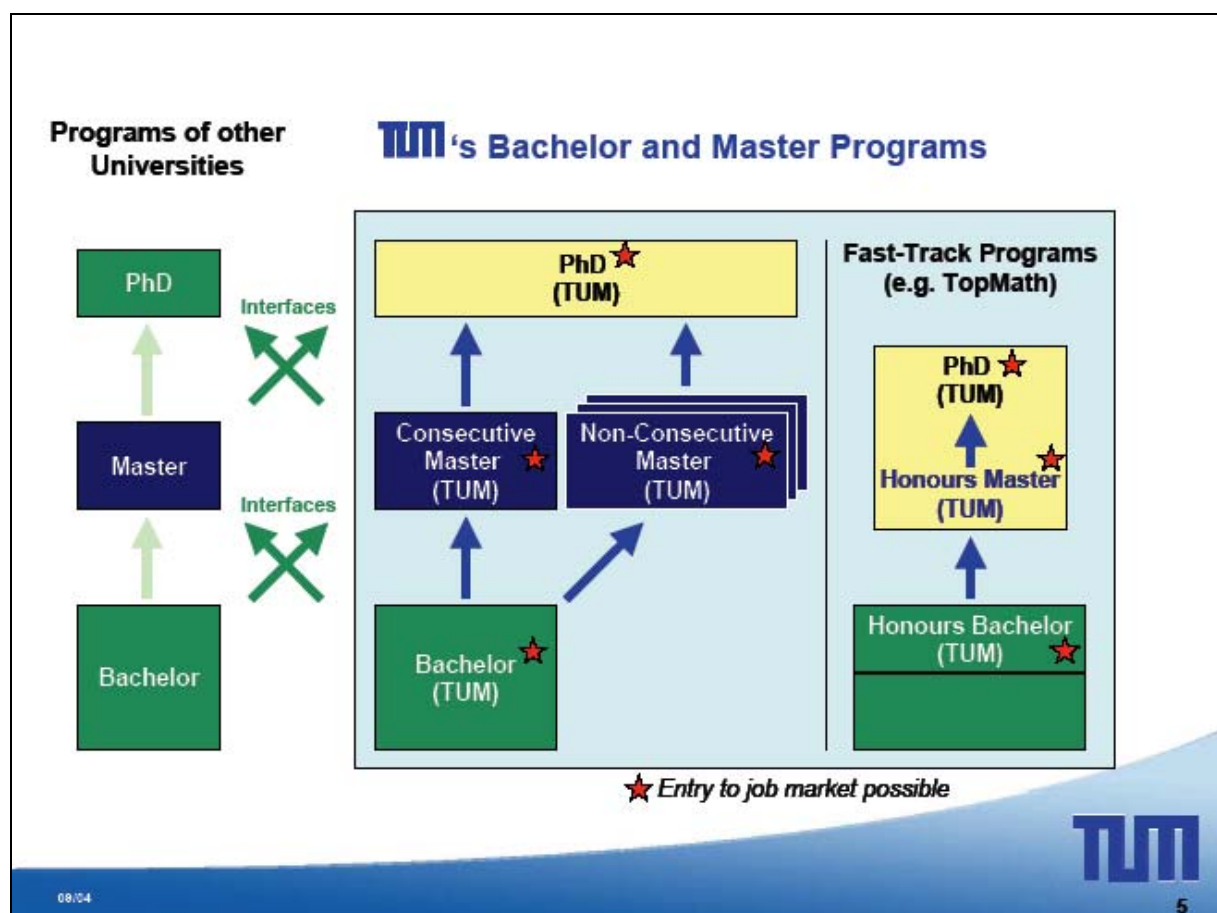
Fachhochschulen and universities have corollarily different missions. Their aims and objectives are different. The success of the German Higher Education System is based on the differentiation between universities and *Fachhochschulen*. The fact that both types of academic

schools offer Bachelor and Master courses, makes the field more difficult for the outside judgement.

Bachelors graduating from Fachhochschulen may be admitted to universities by proving theoretical, science-oriented basic knowledge. This knowledge may be submitted by means of special courses, offered by the universities.

- **The Master's degree must be and will be the standard university degree in the future**

Keeping this differentiation in mind, let me outline some consequences that derive therefrom for the university study programmes, using TUM as an example:



The Master degree must definitely be the prevalent degree for a university. The quality of a Master degree has to be equivalent to the diploma. It is a prime goal for our university to educate scientists with a top qualification in their field. It cannot be the aim of TUM to produce graduates with lower and more practical oriented academic qualification. This domain should remain with the Fachhochschulen, while the majority of students from universities should aim at an overall study of five years. Gifted students should be eligible for a so called fast-track-career, which shortens the whole study period.

Nevertheless, we are convinced that the two-tier-study-system offers new options for university students. After having reached the Bachelor degree, students are at a cross-road, which simplifies and promotes an exchange with other universities, but also opens ways into careers in other disciplines. Last but not least, the graduate may also decide to enter the job market, although we believe this will not account for the majority of students.

Contrary to the “Bologna Declaration”, it is contra-productive in my view to restrict admission for master-courses by setting up any kind of quotas. A Bachelor obtained from a German university guarantees a high academic standard. Therefore all university graduates with a Bachelor degree should be eligible to continue with a Master programme. The standards of admission have to be set by the respective university. It also seems necessary to introduce PhD programmes to permit talented students at an early stage to accelerate the pace of their academic qualification.

We are deeply convinced that graduates capable of doing basic research, developing state-of-the-art methodology, based upon a sound

theoretical understanding should be encouraged and promoted to continue with their studies. They are indispensable as researchers and as future university teachers. With this belief, we are also in good company with industry, which more than ever requires very profoundly educated graduates. Therefore we have to make sure that a sufficient number of graduates with a five-years education are formed at our universities. This is essential for a high-tech country like Germany. On the other hand, this country also needs young university graduates, scientists and engineers, who are well educated, without striving for a longer academic education. This puts us to the question, which should be the profile of a university graduate with a Bachelor's degree, and how about his acceptance in industry.

- **The Employability with a Bachelor's Degree**

The German universities are facing now a situation where they have to create a hitherto unknown Bachelor's programme that clearly differs from the consecutive Master's programmes as well as from the Bachelor's programmes of the Fachhochschulen. The main feature of a Bachelor's programme at the university is clearly an education, which is focussed on application that enables the student to contribute to the company immediately after joining it. The teaching of theoretical aspects is reduced, compared to a five-year programme, but still broadly exceeds the theoretical courses of a Bachelor's programme at the Fachhochschule. The curriculum focusses on episodes where the student has to apply his knowledge to practical, e.g. industry-relevant problems. An internship and the Bachelor's Thesis allow him to work in a project-oriented manner and help him to get prepared for his professional environment in a company.

At the beginning, German industry slowly responded to the Bologna reform process. In the meantime, there have been various clear statements of the professional associations, as well as industry itself that welcome the implementation of Bologna. Industry's main expectation has traditionally been the prospect of young graduates, who are available at an early age (for a lower wage) than the traditional German graduate. Further requests have been more job-oriented training, and international experience. On the other hand, for a long time the majority of companies, especially the medium-sized and smaller companies were barely interested in the Bologna discussion. This has changed in the course of the last years: German industry more and more stresses the demand for Bachelors and is willing to provide them with appropriate career prospects. Aside of their own activities, German industry expects from the Bologna Process that it also ignites a fundamental reform process within the higher education system in general. The introduction of Bachelor's and Master's degrees is just one aspect amongst others in this context. In the summit of a severe economic crisis, German industry feels that the innovation process is getting more and more crucial for the wealth of the German society and the companies themselves. This has led to the belief that Germany must significantly elevate the number of persons with higher education. In this context, the introduction of the Bachelor's degree is supported by industry, provided that the programmes lead to a qualification that matches industrial demands. Industry clearly points out that at the end both qualifications will be essential for a knowledge - and high-tech based society like ours and others in Europe.

I propose that the German university Bachelor differs from the Fachhochschule Bachelor as follows:

- strong theory- and methodology-based training in the discipline (4 semesters);
- education to handle the discipline in a professional environment (e.g. team-working, group and labour psychology, rules and patterns of leadership, patent laws and rights, environmental right, social right, etc.)
- It is insufficient and contraproductive to duplicate the Fachhochschule Bachelors with their practice-oriented approach at universities.
- Focus on skills related to the discipline. Universities must yield a surplus of intellectual yet discipline-related skills, as mentioned above. A sheer relabelling of diploma/bachelor-master education will hamper the credibility of our qualified German university education.

- **The German Accreditation System**

As my last point, I would like to refer to another important issue within the Bologna Process. Quality standards are a key issue for the implementation of the Bachelor-Master-Course-Structure, therefore the Bologna Declaration proposes “the promotion of European co-operation in quality assurance”. Contrary to the now used system of accreditation agencies, which more or less can only guarantee a minimum quality level, we propose that quality standards should be oriented along a differentiated evaluation within internationally acknowledged benchmarks. Universities from various countries should form international alliances. This would allow the mutual assessment by forming teams of peers consisting of the top academic teachers and scientists available. This could be a great contribution to the formation of

a European area of higher education being as good as any academic system around.

In conclusion, once again I would like to emphasize that the implementation of the “Bologna Process” is a chance for the university landscape in Europe including Germany. It certainly is not easy to maintain the excellent parts of the German university system, while adapting to the advantages of the new structure.

On the other hand, the two-step education gives us much more flexibility regarding emerging new professional markets, and much more internationality. Beyond that, universities can extend their scope into the third cycle which is the life-long learning sector. The latter one may become as important as the undergraduate and graduate university education.

It is obvious that the series *discovery – invention – innovation* is a process with deep roots in science. The commitment of universities is the adaptation of this process to the dramatic changes happening in our societies and economies. Universities are the centers of scientific progress.

I would like to encourage my colleagues, you, as the members of the Alexander von Humboldt family, in helping to adopt the Bologna objectives along the indispensable principles of *internationality and quality*.