



Quo vadis universitas?

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Abstract

Diagnosis depends upon knowledge, education, and training. Therefore, properties of universities influence any diagnosis to a high extent.

The article considers the advantages and disadvantages of the European universities that can be explained only by the analysis of their history. In contrast to the conventional theories, the economic enforcement was the driving cause for university formation in the Middle Ages. The guild concept created by Siegfried Bär 15 years ago explains the historical imperative, but also the construction faults of the universities resulting from their specific features essentially the principles of self-autonomy and cooptation. The faults of university organization are the main reasons why nearly all university reforms failed. There does not exist any convincing proof that the introduction of new organization models such as bachelor and master degree courses or excellence clusters are of more efficiency in teaching and research. The international university ranking did not change in recent years; the top ten universities are still located in the USA and Great Britain. The majority of German universities range between the middle and the end of the ranking list. It is demonstrated that the main causes of this discrepancy are the delay of academic qualification, the lack of competition, the dependency of the public policy, and the insufficient financial support. Progress in university research and teaching can be obtained only if these problems can be solved.

Keywords

[University structure](#), [guild conception](#), [Bologna process](#), [excellence clusters](#), [elite universities](#), [university ranking](#).



Introduction

Diagnostic procedures in surgical pathology are subject to major changes today as well as structures and environment of universities which form the foundation of any diagnostic procedure in surgical pathology.

European universities are old, and have been founded 800 years ago or even earlier. You have to take a look into their history if you want to understand their advantages and disadvantages, their properties and constitutional features. Any answer to questions of future development is founded in history. Future starts today, and becomes history tomorrow.

In agreement with this statement I want to discuss three different aspects of this presentation, namely 1) What are the origins of our universities, 2) What is their position today, and 3) In which direction will they most likely develop?

To know about the history of universities is the most important issue in this respect. All their failures and infirmities which can be noted until today can be explained in analyzing their history. All of them were born in difficult delivery, and most of the stillborns were seriously and chronic sick. Therefore, we have to analyze symptoms, and, in addition, causes. In medical terms they are called aetiology and pathogenesis. A founded analysis of pathogenesis and of today's symptoms is essential when we want to propose certain therapies and perspectives.

Therefore, let us start with the patients' history.

The origin of the university

The scripts and textbooks of universities report numerous facts of their history and importance, and give only little information why they do not function over a long period of time. Most textbooks on universities are biased. Only individual reports tell us causes and influences that contribute to university malfunctions and correspondingly undertaken reformations today and in the past. Forecasts on the university development are even rare and usually limited to some specific events.

Most contributions discuss only two university specific issues, namely autonomy and granting of doctorates. Sometimes, its independent jurisdiction is mentioned which was an important issue in the past.

There are, however, additional specific features of our universities which developed in the last centuries and can be considered as severe congenital defect still influencing today's behaviour.

I will discuss this in detail later and start with the question:

Which driving forces founded the Universities in Europe in the medieval times?

A university was considered a community of masters and scholars (*universitas magistrorum et scholarium*, Paris 1221). The masters taught in ancient monasteries and diocese schools,



in churches and on market places. Both masters and scholars moved around from one place to another for breadwinning and donations. They taught mainly theology, in addition philosophy, law, medicine, alchemy, and some natural sciences. The more noted or famous the master the longer he could teach at the same place and the more students wanted to become his scholars.

The University of Bologna and that of Salerno are considered to be the eldest European Universities. The University of Bologna was founded in 1088. Medicine was taught in both universities whereas the Bologna University developed to a famous school of law.

In 1257 Robert de Sorbon, the chaplain of the king Ludwig IX, started his courses of lectures for poor students of theology. This is the official year of the foundation of the University of Paris. The Dominican Thomas of Aquin who was before a scholar in Paris and later a scholar of the Dominican Albert Magnus in Cologne returned back to Paris in the same year. Thus, the course of lectures of the Sorbonne was the main contributor for the Paris University glory.

Several additional universities were founded in the 13th and 14th century, especially in Italy, France, Great Britain, Spain and Portugal. The emperor Karl IV established in Prague the first German University in 1348, that of Vienna followed in 1365 and that of Heidelberg on October 1, 1386.

The foundation of the early German Universities can be seen in relationship to the fight of the two contemporary popes Urban VI and Klemens VII, who is called the slaughterman of Cesena. This fight induced a migration of pope Urban's masters and scholars from Paris to Germany. The German chieftains and town councils were in need for lawyers, supervisory boards, and medical doctors for their soldiers, teachers, and, in addition, wanted to gather prestige.

All in all 36 universities were founded at that time including the University of Cologne in 1388, and that of Erfurt in 1392.

The popes and emperors supported the foundations and provided the universities with privileges and sinecures, whereas the cities welcomed the financial support of rich scholars and their families.

Despite these obvious circumstances the question remains whether and, if yes, which additional factors contributed to the historical cluster of university foundations, i.e. was there a historical basic necessity, and, if yes, why and how.

In most textbooks the universities were implemented due to the arising number of philosophers and theologians in the medieval, or as a social concept of the scholasticism, which is no real explanation.

Theories on university formation

In the following we will discuss the theories on university formation:



1. The concept of tradition and cultural translation:

This concept considers the European universities as offspring of the Arabic – oriental schools and medieval monastery schools

2. The concept of intellect:

The growing interest in natural sciences and experimental verification motivated the formation of discussion groups and forums

3. The social concept:

Medieval universities were created in association with improved social life, labour specialization and research in the growing cities.

4. The combination theory:

The smartest historians combine the three concepts and claim that especially the concepts (2) and (3) would be the most truthfully theories [1].

However, as we will see, all three concepts fail in reality. Without any doubt the formation of universities was accompanied by humanistic ideas such as freedom of expression, development of natural sciences and experimental verification of ideas. However, these conditions derived from the antique scripts and did already exist for a long time. They cannot be considered the main driving force.

Why these concepts failed and universities became reality?

The answer is simple and can be seen in economic enforcement, namely the regulation of competition and rivalry, allowing for coverage of personal existence. The meaning of the Latin word *universitas* includes entirety, cosmos, and in association with council also guild. In fact, universities were organized like a guild. In his book about the nature of the university Siegfried Bär analyzed the historical development of universities and demonstrated that they look alike guilds in structure and function, starting from their beginning until today. His guild concept explains the historical imperative, the inner structures and workflows as well as deficits which last until today [2].

How did the universities start?

With increasing numbers of students more and more masters were needed and trained. Scholars became masters. Their increasing quantity also created higher quality in education and training due to increasing competition. This privilege of reproduction and cooptation remains until today.

However, the market was not regulated. More masters were trained than actually needed. The number of domains was limited. Naturally, the oversupply of masters diminished their salary which was taken from the scholars and from the examination fee. The number of already trained masters could not be limited because a correcting monopoly did not exist.



The craftsmen in the growing cities were confronted with the same problem: They founded guilds in order to protect themselves against the increasing pressure of competition, and to participate on the power of the patricians and merchants. They were organized in a hierarchic manner and forced all colleagues to become a member of their guild. The foreman (Latin *magister*) was the boss, trained apprentices and was supported by assistants. The regime of guilds regulated the number of trainees, the prices, the income of their members, the quality criteria of their products, and ruled who was allowed to produce and who not.

What was the “regulated product” of the university masters, the professors?

They graded their sapience into classes of wisdom, or, according to Siegfried Bär into degrees which are equivalent to habile commercial packages. This package marked the reputation and status of its owner.

Wrapping and sale were organized like this:

The scholar had to start with the so-called liberal arts (*artes liberales*). He received the lowest academic grade and was called *baccalaureus* (lat. *baccalarius*) when he passed the *Trivium* grammars, dialectic, and rhetoric. A *baccalaureus* was a squire wearing a laurel wreath, and can be considered the bachelor in our days.

The next higher grade was the master of liberal arts. At this stage the master (*magister atrium*) could choose to become a *magister regens* and to teach liberal arts including geometry, astronomy, mathematics, and music, or to become a *magister non regens* who was allowed to study one of the next higher grades of sciences which included theology, law and medicine. This study lasted for 6 years, theology in Paris for 8 years. It was guerdoned with the highest scientific grade, the doctorate and provided the graduate with teaching of higher sciences. It provided the highest income as the students consisted of sons of rich lords and burgesses. Therefore, the freshly baked alumni tried to impede the study which lasted all together for 12 years or at least the doctorate.

However, in contrast to the guilds it was impossible to impede the increasing number of scholars, because a limitation of students would also decrease the income of the professors. Thus, history tells us that an unlimited training of professors in combination with decreasing number of students is not advisable.

The disproportion between teachers and trainees is the first construction fault of a university. It induced an exponentially growth of alumni and could not be corrected although the university was guild like organized.

The financial dependence of masters from their scholars, the fees for teaching and examinations were the next design fault. They induced a diminishment of educational quality. Passing an examination and receiving a doctorate degree became easier. As a result, the university's quality and its reputation decreased, and finally the students hold off or entered another university.



Self-autonomy of universities

Let us now talk about the third design fault, the often discussed self autonomy of the universities.

Self autonomy is based upon the ruling of committees, not of an individual person. Even the best idea of an individual person cannot be achieved. The better an individual person presents, the more jealousy or even hate is born. The committee will then do its best to kill the individual. An innovative idea has to die and does not fit into a committee wherein equality and "to swim with the main stream" dominate.

Thus, any individual master with outstanding ideas is endangered to be pushed out. University mechanisms and those of political governments result in holding traditional conventions and avoiding innovative or promising renewals.

The concept of self-administration and regeneration results in an additional fault, which is the cooption of masters or of, as called since the 15th century, of full professors. It is the appointment of new professors by the old ones. Who will be appointed to a university, the best one or the one who fits best into the college*?

For centuries those professors have been appointed who did not disturb the power, position and self-esteem of the college, or, in other words who seemed to be or to become not better than their recommending colleagues.

This procedure results in a personal constellation which can be called the *law of bad succession*. The quality of teaching, science and research slowly goes down, followed by the lower reputation of the university, and finally by the migration of students, who look for other, better universities.

The discussed faults, especially those of self administration and ill succession yield slowly and irresistibly, usually within one generation in dysfunction of the university. This process can be called the *law of congealment of universities*.

Usually, the drawbacks get attention and approaches of consequences which do not try to repair the sources or to eliminate the causes. They can only be eliminated if the university will be closed; a fact that happened sometimes in history, either because of political reasons, or by order of a duke, lord, or king.

Reformation of universities: Successful and failed reforms

Under no circumstances the university itself or the city administration or parliament will dissolve a college due to reasons of profit, reputation and employment.

Citizens of political and financial influence and power will apply for reform, arrange a foundation, or support reorganization. Universities will undergo reforms because they are not allowed to die and cannot be "de facto" dissolved.

Herein I will not discuss the history of university reforms in detail; I will only say that with the exception of a few reforms nearly all of them failed [3].



I can mention only three examples of successful reforms:

1. The divinity college which Robert de Sorbon founded in the year 1257 was not organized in a guild manner. It was successful, probably because of the fact that it was headed by a so-called *provisor* (rector), who was committed to an independent board of rector, chancellor, archdeacon of the chapter, and other members. He could be disposed at any time.
2. At the end of the 17th century it was well known that the universities could not be reformed. Some old universities were put under the umbrella of the local state and equipped with new regulations. Examples are the Prussian University of Halle (1694) ruled by the Prussian duke Friedrich III (since 1701 as Friedrich I the first king of Prussia) and the University of Göttingen (1734) ruled by the duke of Hannover Georg August (since 1727 as Georg II king of Great Britain and Ireland. The Prussian state intervened to the self-government of the universities. The appointment of professors of the Halle University was directed by the Prussian ministry. The professor's monopoly for paid lectures and private colleges was cancelled. This opened the door of competition with non-paid docents according to the principle: *Every docent is allowed to lecture*. The foundation was successful, and the University of Halle became the most famous university in Europe for a couple of years.
3. The University of Göttingen was reformed in the same manner, from top to down. Interestingly both rulers king Friedrich I and king George II despised their professors and considered them for useless cacklers, despite their states urgently needed lawyers and physicians.

In aggregate: Reforms of universities that should be more than cosmetic repairs have to be ordered from outside, never from inside. Inner reforms are equivalent to open the door for a devil. Nobody is willing to accept loss of power, income and prestige and will resist.

This fact explains the long lasting fights in favour and against university reforms in history and today. Reports of even small approaches on successful reforms are rare. Therefore, sustainable reforms might not exist. Indeed, numerous articles have been published on failed university reforms in the 18th and 19th century [4].

What can we learn from the failures?

Basically, the German universities teetered on the brink at the end of the 18th century. Only half of the former 42 universities with their 6,000 students did exist 20 years later in 1818. Most of the professors sermonized lectures that were taken from antique books. They were not aware of recent science and research, and contributed to the image of a quixotic bootless bookworm. For example, Schiller informed Goethe about his poor experience with the University of Jena, and Goethe documented his disrespectful opinion about university professors in his famous Faust.

At the age of 20 years Wilhelm Leibniz rejected a professorship offer of the university of Altdorf and preferred to found an academy of sciences in Berlin. The state needed new



perception useful for industry, trade and business. Academies should serve for this purpose and replace universities. However, academies did only employ doctors and professors, they did not train them.

The new universities could offer both training and research. They finally survived because:

1. They offered reputation and prestige that was superior to that of an academy
2. They trained students and contemporary taught them how to research.

Research had to be trained and was extended to natural sciences and experiments. Thus, it was more than just the collecting and collocating of abstruse events by dreamers or mavericks. These preferences lead to the implementation of new universities, in Berlin 1810. The University of Halle had been closed by Napoleon. At this time Prussia owned only two universities, that of Königsberg and that of Frankfurt/Oder. The implementation of the Berlin University lasted for 3 years (1807- 1810) and was enforced by the minister Carl Friedrich von Beyme, who requested reviews from Fichte and Hufeland. In 1809 Wilhelm von Humboldt who was a section leader of the Prussian ministry of education used these reviews to implementing the Berlin University. The cooptation right was interdicted as well as the monopoly to give lectures. The full professors and their non-employed colleagues had to compete, to fight for attendants of their lectures, and to ask for lecture fees paid by the students.

The growing interest on natural sciences which included philosophy induced an increasing number of students. Wilhelm von Humboldt spoke about the “unity of traineeship and research” and “research in reclusion and freedom” and considered philosophy the only true science. Natural sciences were thought to be inferior handicraft equivalent to surgery in medicine.

The introduction of the postdoctoral lecture qualification (habilitation)

The continental block and the depression forced full professors and their unemployed colleagues to hold lectures for reasonable maintenance. The excess of professors allowed the Prussian cultural ministry to shorten the salaries which was approved by King Friedrich Wilhelm III (1770-1840) who had no sympathy with university professors at all.

Full professors of the University of Berlin detected a simple method to assuring their private income and to lower the competition pressure: In 1816 they just implemented a new academic grade and distinguished between the doctor’s degree and the permission to lecture (habilitation). Only lecturers could collect lecture fees and hope for a full professorship.

The method was that effective, that all German universities followed rapidly. The permission to lecture tightened in 1828, when at least 2 years must have passed between the doctorate and the habilitation. Later, new conditions such as increased number of publications, a



comprehensive printed version of the habilitation script and other preconditions were fabricated, reminding of a screw that could be turned around for undeviatingly.

The habilitation concept of the Berlin professors can be considered as useful and effective method to limit the number of professorship applicants, to select specific assistants by promotion or tactical delay for a university career. This could be bedside work for delay or laboratory work with publications for promotion. The distance between promotion and habilitation increased and reached a mean age 41 years today because of these conditions. In earlier time you have been a full professor at this age, whereas today the chances to become a chair diminish from year to year.

For comparison: Rudolf Virchow was still a student when he wrote his thesis on rheumatism with corneal manifestation (*De rheumate praesertim corneae*), passed his board examination in spring 1846, wrote his habilitation thesis (*De ossificatione pathologica*) in autumn 1847, and received the chair of the Institute for Pathological Anatomy in Würzburg only two years later at the age of 28 years.

On average, full professors were elected in the Weimar Republic about 10 years younger than today. Assistants and professors chose their research interest by themselves and were quite often pioneers in their laboratories and investigations including self experiments, especially in surgery. The achievement of individual scientists such as Theodor Billroth, August Bier or Ferdinand Sauerbruch changed to successful team work in the 1940th. Exemplarily are the first open heart operations by Alfred Blalock and Helen Taussig 1944 or the first successful heart transplantation by Christiaan Barnard 1967.

History of full professors

The full professors disappeared from the laboratories with increasing number of assistants in the 1920s. The older assistants took over research and teaching. In replace it was the duty of a full professor to organize the financial support for research and solve administrative issues. For publications he was still the responsible man.

This induced the paradox situation that full professors published the more the less they performed research by their own. They offered the opportunity for research, organized the financial support by their connections and reputation, and fend for appropriate advertisement in terms of publications. In reverse, the assistant paid by his engagement and servant like behaviour. This habit was fully established in the second half of the former century.

The following example in chemistry demonstrates a rare exception: Fritz Haber was a student of the full professor Hans Bunte and was permitted to experiment and publish by his own at the University of Karlsruhe. In 1913 Haber became the director of the Kaiser-Wilhelm-Institute in Berlin Dahlem and won the Nobel price in 1919 for his work on the synthesis of ammoniac by atmospheric nitrogen and hydrogen.



The University before our face

The downfall of the German University research in natural sciences and medicine started with the annulment of individual research in favour of team work. This downfall was already initiated in the Weimar Republic and was reinforced by the exodus of German and Jewish experts during the Nazi's dictatorship.

According to Bär one of the main factors for this development was the incapacitation of assistants at that time and which continued until today. In principle, assistants are losing their status of stand-alone researchers and become dependent upon and patronized by their boss or full professor.

Paternalism kills ambition. Innovative ideas in connection with diligence can be harmful because not all full professors tolerate a superior assistant. Exceptions are rare, and many professors became masters in abuse and slavery of their assistants. On the other hand, assistants cultivated their subservience and acclimatisation.

This interplay was characteristic for universities in both East and West Germany. A bitter fight for a full term professorship developed because the number of positions is limited, and only a full professorship guarantees prestige, high income, and access to financial and research resources. In the last 25 years public advertisement and the demand of public attention increased, and opened the door to publish preliminary, non confirmed data as well as falsifications.

The unbound and solitary researcher who is only interested in information and knowledge does not exist any more. Otherwise, it is an error to believe that big research teams achieve more in quantity and quality research. The size of a research institute is good for the prestige of its director. The effectiveness of its results is, however, less, and seems to decrease as shown by the statistics of the last 100 years.

In reality, the most significant results were obtained by small research groups. An example can be seen in the Institute of Immunology of the University of Basel. Every assistant and postdoc did research without being financially dependent upon the director of the institute. All of them were commercially supported and paid by Hoffman la Roche. This small institute published about 3,000 articles and created 3 Nobel price winners in a relatively short period of time. Nobody took notice of this good example how to improve the organization of universities.

Without any doubt the decline of university research is associated with the exponentially growing number of assistants and docents, the repeated established cooptation right, the individual gain for power, abundance and influence which is supported by the shrinking financial governmental and industrial subsidy as well as by increasing power of administration and its participation on gathered research money.

The discussed mechanisms and methods influenced the universities for centuries and induced a congealment as well as a decline of research and teaching in periods of about 30 years. The undertaken reforms did not help. Even the so-called reform universities Göttingen,



Halle or later Bochum and Konstanz could not resist against these permanent laws of exponentially increasing number of graduates, disintegration of degrees, and diminished expertise of newly elected professors.

Implementation of new universities

Many new universities were founded after the 2nd world war, but all of them in the Federal Republic of Germany. 12 new universities were implemented after the unification, 6 universities in the old federal states (6 of them private) and 3 universities in the new federal states (1 private). In addition, 3 universities were reopened, 1 university in the old federal states (Duisburg-Essen) and 2 universities in the new federal states, namely the university of Frankfurt/Oder (originally founded in 1506, closed in 1811, and again implemented as Europe University Viadrina in 1991), and that of Erfurt (originally implemented in 1306, closed 1816 by Friedrich Wilhelm III, and again implemented 1994). All reestablishments could not escape the already discussed fate, especially as the post-68 reform failed in the 1970s.

The demands of employed non-professors to implement a steering committee with equally distributed voting number of professors, non-professors, and students as well as the abolition of habilitation and implementation of assistant professors were not fulfilled and failed in the long lasting struggles between the federal and state governments, the political parties, and the representatives of students, non-professors and professors.

Finally a cooptation was founded including the students and non-professors; however, the professors still hold the majority of votes. The length of study periods did not become shorter, the study conditions did not improve, the number of students increased remarkably, and the habilitation was not cancelled. To the contrary, it lasts much longer today. Committees headed by their professor's contract out for preselected candidates, which is not in agreement with fair competition.

As shown by history, all university reforms failed in Germany as well as in neighboring countries with a similar educational system, for example Austria. A reform will start once a university's performance declines. A reformation repeats every 30 years, and exactly this is happening again at present. Political factors did induce the last reorganization of the East German universities, which happened approximately 30 years ago. At that time approximately 600-700 docents in West Germany were asking for full professorship, and could, therefore, enter the open positions in the East German universities [5]. Certainly, not all of them were outstanding scientists or teachers, not even when elected for the Humboldt University of Berlin.

Nikolaus Werz writes in his article „About the rearrangement of the German Universities” that the Western German University structures were simply transferred to those of East Germany. The classic humanistic university structure was taken over, and the opportunity of an innovative start was lost [6]. The unification of Germany was organized by an



incorporation of the GDR into the FRG, in accordance with article 23 of the German Basic Law, and, therefore, the procedure was an agreed annexation and not an equal association.

In between we are confronted with the new, not yet finished all-German university reform. The 5th amendment to the university law of February 16, 2002 planned an autonomous, without habilitation and from full professor independent junior professorship. This plan was cancelled by the Federal Constitutional Court in 2004. The Federal Constitutional Court in Karlsruhe also prevented an abolition of lecture fees at the Berlin University in 2005 [7]. Since that time the individual federal states are responsible for their universities. As a consecutive, most of them forced the universities to introduce lecture fees, but the student's protests effectuated the cancellation of lecture fees after a couple of years in most of the federal states.

The Bologna process and the creation of elite universities

Another university reform is the so-called Bologna process, initiated in 1999. It is a European wide reorganization of education at high schools including universities without innovative ideas and options for a basic reconstruction of universities. One of its basic ideas that students can study at different European universities without losing time for education failed, because the studies are that specific and narrow that a student have enormous difficulties to switch from one university to another one, even for only one semester.

Many of the reform ideas only deal with superficial rhetoric and terms, such as multidisciplinary, competition, differentiation, reputation, excellence and elite. Statistical analyses should answer the questions of quality and efficiency. Almost everybody forgets that such evaluations are bound to a base line which is not included in any evaluation procedure.

All the rage is the introduction of so-called excellence clusters, which are a financial support of universities that organize themselves for multidisciplinary research. Whoever this created, the fact that knowledge is not of addition-curing character seems not to be known at all.

According to the latest published statistics (2012/13) all together 428 colleges are registered in Germany, 108 of them are universities. On the majority they are state universities, 10 are private, but only one has a faculty of medicine. 11 out of the 108 universities carried the title elite university. For these 11 universities (10 percent) 2,4 bn EUR are provided. What is with the remaining 90 percent of the universities?

The competition to become a university with high reputation is biased on and mainly bound to external financial resources and support. In principle, industry supports technical research and less often theoretical or basic research. It is also in the focus of Governmental financial support nowadays.

The causes of the universities' inefficiency are not forced to become changed, and consecutively, the universities' situation will not change too. The proof, that so-called elite universities will hold their top position is also missing, not speaking from education, training, and teaching.



Having discussed the failures one should ask for universities that are more efficient, productive and innovative. Universities in the USA and in Great Britain produce more publications, more Nobel price winners, and seem to be “simple better”.

This is a fact which is known since 1930, especially after the immigration of German scientists to the USA. In addition, English started to become the leading language in science at this time. Investigations of von Hammerstein (1999) revealed that 24 Nobel price winners left Germany from 1933 to 1939 and got top positions in American universities [8]. Therefore, the educational system in the USA must significantly differ from that in Germany. How?

Students in the USA or in Great Britain finish their study and receive their doctorate at a younger age compared to the students in Germany. The German doctorates were as young too at times when German universities hold an excellent reputation. Even more, the doctorate was a requirement for the medical state examination (for example Virchow: doctorate in 1843, state examination in 1846). Today, a student can start with the thesis, but receives the doctorate only after passing the examination.

Habilitation is not known in the USA or in Great Britain (also not in France). An assistant professor who already gets trained in research replaces the long lasting procedure of habilitation.

An American or British postdoc or assistant is between 25 and 35 years old, i.e., in his professionally most productive years. Most of the German students pass their first examination at this age without any knowledge and profound introduction into research. The habilitation costs another 5 years at minimum. According to the German Federal Statistical Office the average age of graduation amounted to 28 years, that of habilitation 40.2 years in 1990, which makes a difference of 12 years.

Universities in the GDR and FRG

There was no major difference between the universities in Western Germany and those of the communistic GDR. The antique power of full professors in the GDR could not be resolved in the reforms of 1946 and 1968. Most of the full professors were members of the SED party with corresponding influence and power. Graduation and habilitation in the GDR can be considered a useful tool to filter high school education for terms of social behavior and engagement.

A candidate for a professorship had to identify himself with the political system.

I myself had to wait for several years before I was allowed to work on my habilitation. Our former director Professor Louis-Heinz Kettler and his colleagues could easily delay or promote individual research because of shortage in research instruments and consumables. A Bulgarian colleague and I solved this problem in asking for a research stipendium at a research institute in Moscow for 6 months and for learning from the great Soviet Union. I could not foresee that this research abidance yielded in a long lasting friendship with more than collective 50 publications, and I would not miss this experience.



By the way, the organization of Russian universities is comparable to that of the German ones. In addition to political engagement the steps to become a full professorship were undermined with inflexible barriers such as an extensive long habilitation script, and several scientific certificates. This may also explain the inefficiency of the Russian scientific community.

In Germany all mandatory reforms are not or only half hearted conducted. There is, for example the introduction of a junior professor. How old is a junior professor allowed to be? A junior professor at the age of 45 was appointed at the University of Potsdam and cheered by the press!

Bachelor and master

The introduction of master and bachelor degree courses will probably not improve the quality of German universities, especially as they were started already in 1998. In addition to international comparison of education, what are they good for?

The bachelor is the lowest academic grade in the USA and Great Britain. It can be obtained after 3 – 4 years high school and corresponds more or less to the German Abitur, which was introduced in Prussia already at 1788. It might be connected with the antique term baccalaureus, and is more or less the same.

The term master reminds fatally of the guilds. Now we came back to the beginning of this lecture, a communication collective of scholars, masters, bachelors, teachers and pupils. What is the impact of the recently implemented masters and bachelors on scientific career, research and teaching?

This is difficult to answer because of missing experience for a longer time, and difficulties to compare the results with different approaches in education and training. Obviously there exist similarities with the old universities. They are related to commercial aspects, namely to produce, advertise, and sell a product.

Academic grades are “sold”, and competition has to be observed in both the universities reputation and its resources. A master degree of a famous university just counts more than that of a less known one as well as a publication in a journal with high citation index. The reputation of a university depends upon its resources and professors, and the resources depend upon its reputation. Both account for each other.

University reputation

How to measure reputation? Several methods have been introduced to rank a university. One can questionnaire the ranking method. However, if several of them give the same result, one can hardly be in doubt about the result.

In 2008 the QS World University Rankings yielded 10 best universities in the order Havard (1) Yale (2), Cambridge (3), Oxford (4), California Institute of Technology (5), Imperial College



London (7), University of Chicago (8), Massachusetts Institute of Technology (9), Columbia University (10).

Actually (2014/15) the Times Higher Education Ranking (THE) showed the following order: California Institute of Technology (1), Harvard University (2), University of Oxford (3), Stanford University (4), University of Cambridge (5), Massachusetts Institute of Technology (6), Princeton University (7), University of California, Berkely (8), Imperial College London and Yale University (9). Similar results have been obtained by the Shanghai Index which takes into account publications with high citation index and Nobel prizes in natural science and medicine.

If we accept these results, the top ten universities are located in the USA and Great Britain. According the THE Rankings 2014 most of the German universities including the elite universities except the LMU Munich and the University of Göttingen were an also-ran (Humboldt University of Berlin 80, Free University of Berlin 81, University of Tübingen 113, Technical University of Dresden 135, University of Freiburg 163, University of Bonn 195).

After the QS World University Rankings 2014/15 the best German university in Germany Heidelberg holds place 47 (2008 place 57).

What do Harvard, Stanford and Yale possess and Heidelberg not?

There exists an intensive exchange in education, science, research and also politics between Germany and the USA. Did nobody in Germany recognize the advantages in the USA and the deficits in Germany?

German politicians hesitate to copy even successful models from neighboring countries as long as the own deficits cannot be hidden anymore. Arrogance might have been the reason why West German politicians did not overtake the successful model of polyclinics in the former GDR, which have been first eliminated, and which are now reborn in so-called physician domains or centers of medical logistics (MVZ).

Universities and high schools cannot reform themselves. History has proven that the impulse to reform came from outside of the institution, i.e. was ordered by the lord or government. It passed down from generation to generation. Basic reforms failed due to the resistance of full professors, of the faculties, and because of lack of knowledge of the underlying principles. Only the public health care was reformed more often. Herein, 7 reforms started within the last 20 years in Germany.

Most of the visiting scientists were not interested in the workflow and scientific strategies of their host institutions. They were only interested in research that supported their own career. Since the enrollment fee had been cancelled in 1963 the full professors were no longer interested in teaching. Teaching is considered to be a surplus burden and usually ordered to docents or even young inexperienced colleagues.

Have the full professors been idealists in the past? For sure not! The environment, the work conditions, and the salary were different. The last reformation of the universities effected an



economy of the full professor's salary. Former C4 (full) professors were replaced by less earning W3 and W2 professors. As a consecutive, numerous professors switched to private institutions. The same conditions can be noted for financial support of education and research: In the USA significantly more public and private funds are provided than in the European Community, comparing with the USA Germany is number 10 before Spain and Poland [9].

Perspectives of the University

Let us ask again: Quo vadis university? The answer is disappointing because nearly all reform approaches failed. It seems to us that basic repair was not possible despite the involved responsible financial and political administrations must have been informed about the principle defects.

The self-governmental universities fear that they might kill themselves. The responsibility bearing politicians generally act in 4 years periods; periods that are too short to reform a university.

Most of the qualified scientists recommend autonomy of universities in their analytical perspectives. Autonomy should be able to protect a university against state interference. This is a self-delusion because the universities are financed by the state.

In Germany only a few private universities exist, but only one with a faculty of Medicine (University of Witten-Herdecke, implemented in 1982; in October, 2014 an additional private Medical School of Brandenburg was founded). The remaining about 100 universities are depending on the public funds and on financial support by the technical industry. This sponsoring decreased continuously in recent years.

Nowadays the ordinary, old professor holding university has changed to a cluster university that consists of mainly temporary employed professors, junior professors, docents and assistants. Is this structure of more efficiency in teaching and research?

A convincing proof does not exist. The cooperation of students in teaching boards did not improve the study conditions and teaching quality.

On the contrary, the new implemented degree course of medicine in 1999 flopped completely. This course trained students of the 1st semester on patients and bed side teaching, although the students did not show up with any theoretical or medical background. The claimed knowledge incredibly contradicted the actual.

What remains? As long as lacking competition, insufficient financial support, disregarding of teaching, self-autonomy remain in a university, as long it will behave similar to a guild construct. No excellence or first class performance can be expected. The abolition of academic tradition by the 1970 reform was counterproductive. The believing that abolition of appearances and symptoms will change substance is a misconception. The annulment of robes did not remove the muff of 1,000 years.



The abolition of university traditions impedes its passing down generations. Characteristic is the crude acquaintance of alumni by the university administration.

The perspectives of our universities are not clear. Alternative solutions or replacement of universities by different institutions cannot be seen. The only approach is the rising competition enforced by offered financial support. Nonspecific lectures provided by a *studium generale*, "which forward basic structures and functions of sciences to the student" [10] are nonrealistic solutions.

Most articles that try to answer questions of university perspectives formulate only witty sentences or Solomonian verdicts. Some authors cite sentences of Nobel price winners, for example of Albert Einstein (1924): "The university is a machine of poor efficiency, however irreplaceable" [11].

In my opinion there exists an alternative solution. For example, one should promote young students to emigrate, the best to Havard, Yale or Princeton. May be, some Nobel price winners will return.

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