CHAPTER 15

The German Excellence Initiative: Changes, Challenges and Chances for German Research Universities

Bernd Huber

INTRODUCTION

For more than 200 years, the German university system has followed the ideas of Wilhelm von Humboldt — the unity of research and teaching, the freedom of teaching being the most important of Humboldt's principles. These ideas have been followed until today, even though the external conditions that universities have to cope with have changed dramatically. On the one hand, the rising number of students asking for an academic education has led to the modern mass university; on the other hand, universities have to deal with numerous economic constraints. Above all, the public expects universities, as a motor of innovation and wealth, to provide answers for the most urgent questions and problems facing mankind (Hinderer, 2007; Boulton & Lucas, 2008). In spite of these different demands, the egalitarian tradition of the German university system has been continued until today, based on the conviction that all universities are basically similar and that a student or professor finds equal opportunities and conditions, no matter at which university he or she studies or works. This assumption has been put to a test in recent years with the so-called Excellence Initiative of the German Federal Government. Now, only three years after this program was launched, huge changes can be observed in the scientific landscape.

In this paper, I would like to highlight how the German university system is being challenged and changed through the Excellence Initiative. Further-

more, I will outline the general role of research at universities, and how it is affected by the Excellence Initiative. I will raise various issues that I think are important and could serve as a basis for further discussion.

THE EXCELLENCE INITIATIVE IN GERMANY

In 2006, an immense innovation movement began in Germany's university landscape. Initiated by the Federal Government and supported by the state governments, a program was set up providing 1.9 billion Euros to support top-level research at German universities. The program consists of three funding lines: Graduate Schools to promote young researchers and train outstanding doctoral students; Clusters of Excellence to establish internationally visible, competitive research and training facilities; and Institutional Strategies to develop top-level university research in Germany and to increase its competitiveness on an international level (Deutsche Forschungsgemeinschaft, 2009). With the Excellence Initiative, universities were asked to form outstanding research clusters and to develop institutional strategies preparing universities for global competition among research institutions. For the first time in German scientific history, a competition had been initiated not only on research contents, but also on the strategies of universities for building the proper framework and surroundings to facilitate and foster excellent research and attract the best researchers in the world. As this caused considerable movement within the German university landscape and received great attention abroad, the German government recently decided to continue the program for another five years until 2017, with increased funding of 2.7 billion Euros (Verwaltungsvereinbarung zwischen Bund und Ländern, 2009).

Motives behind the Excellence Initiative

Various reasons led to the launch of this new program. The initial idea was developed under the former federal minister for research, Edelgard Bulmahn, who developed the idea of boosting selected universities in Germany to enable them to compete with world-class universities like Harvard, Oxford or Stanford. At that point, this idea was rather new and was welcomed by the scientific community that had demanded long before a substantial increase in research funding and a commitment to promoting top-level research in some excellent universities in Germany (Bundesministerium für Bildung und Forschung, 2005; Schultz, 2007).

Under-investment in research in Germany

The first reason for developing this program was and still is the severe under-investment in research in Germany and Europe in general. The following figures show clearly that in terms of percentage of the GDP dedicated to research, Europe

is far behind the U.S. and, even more so, Japan. The 27 E.U. countries spend an average of 1.8% of their GDP (Germany: 2.5%) on research and development, while the U.S. invests 2.7% and Japan 3.2% (Eurostat, 2008). This under-investment in R&D concerns both the private and the public sector. To some extent, the situation in the private sector is even more serious. In Europe, roughly just half (50%) of the total R&D spending occurs in the private sector, while the respective figure for the U.S. is 61%, and for Japan as high as 75% (Eurostat, 2008).

What is particularly worrying is the fact that the gap between the U.S. and Europe may widen over the years to come. In the recent stimulus package of the new U.S. government, almost US$78 billion will be spent on education, training and research (http://www.recovery.gov, 2009). In comparison, the German government decided to invest the sum of 18 billion Euros in the next ten years for universities and research institutions, 2.7 billion Euros thereof for the continuation of the Excellence Initiative (Verwaltungsvereinbarung zwischen Bund und Ländern, 2009). Although this is the biggest sum ever invested in R&D in Germany since World War II, the important conclusion is that we still need more money for research both in Germany and in Europe. This is a key message, and European universities should state it as clearly as possible at every single occasion. It must be clear that we have to spend more on research — not repeating the mistake of subsidizing ailing industries — if we want to stay competitive relative to other countries, and emerge from the current crisis as innovation leaders of the future.

Strengthening research at universities

With the Excellence Initiative, research at universities was significantly strengthened and moved to the centre of public attention. What is important in political and strategic terms is that the Excellence Initiative explicitly focuses on research at universities. This is notable because Germany has a strong tradition of non-university research institutions like the Max Planck institutes or the Helmholtz and Leibniz association. With the decision to promote research at universities, the government gave a clear statement of support to universities and their role in research.

One could easily imagine a situation where a large part of research is conducted and concentrated outside universities. Similarly, the original idea behind the foundation of a European Institute of Innovation and Technology (EIT) was to build a completely new research unit outside universities, at the European level (Communication from the Commission to the European Council, 2006; LERU, 2005, 2006).

So the question is: is there a comparative advantage of universities relative to other research institutions? In my opinion, the answer is a strong yes. And I will underline this with two main reasons. Firstly, universities are the only institutions that are able to cover the trans-disciplinary nature of many

themes in research. For example, life expectancy in European countries dramatically varies in different groups of the population. In some major European or American cities, you will move from areas with a life expectancy as low as 55 years to areas where life expectancy is close to 80 years (Fogarty International Center, 2008). This fact raises many medical, sociological and economic issues which can be dealt with by the interaction of various researchers at universities. But how to tackle this kind of interdisciplinary research outside universities is a difficult question. Looking at the outcome of the first round of the Excellence Initiative, we can undoubtedly state that most of the successful Excellence Clusters in Research are of a clearly trans-disciplinary nature. They involve different faculties of one university, and also integrate neighbouring research institutions and research departments of private companies, thus providing an ideal environment for innovative research.

The second reason why research should be undertaken at universities lies in the education and training of new researchers. Each new generation of researchers learns analytical rigour and the ability to study complex issues by doing research. In this sense, research at universities is a necessary condition, a prerequisite for any society active in research, even if a larger part of it might be concentrated outside universities.

This gives universities a unique role in the process of research, and I think that we as universities too often forget to explain and promote the particular strength of our institutions and the benefits we provide to society (Boulton & Lucas, 2008).

Competition

A brand-new component of the Excellence Initiative was the fact that funds were granted on a competitive base. This was an entirely new element since it introduced the idea of competition between universities to the German university system; the German system and the majority of the university systems in other European countries have a strong egalitarian tradition with the basic idea that, at least in theory, each university offers the same level of quality in research and teaching. According to this tradition, it should not matter to a student to which university he or she is admitted. Similarly, professors would find equal conditions for their work, no matter which university they conduct their research at. The Excellence Initiative showed that this scenario was not a realistic one. What had been common knowledge for all stake-holders, though never admitted in public, had now been openly revealed: There are better and worse universities; there are universities that conduct top research in some areas, but are only average in others; and there are universities that do not play a crucial role in research at all, but have an important part in regional development and teaching. By taking up the challenge of competition, it became obvious that the different roles of universities had to be acknowledged and taken into account (Hinderer, 2007).

Changes originated by the Excellence Initiative

By explaining the main motives behind this competition, I have already hinted at some major changes that were brought about by the Excellence Initiative. Nevertheless, I want to stress three major fields where huge changes in recent years can be illustrated.

Reputation

Although the total funds granted in the Excellence Initiative are not particularly high, the whole program has had a considerable echo abroad. Before the Excellence Initiative, the German science system had to some extent fallen off the map. With the start of the program, Germany's visibility on the science landscape has been considerably strengthened. What is more, not only the German system as a whole, but particularly successful universities have noticed a huge gain in reputation. The German program and its outcomes have been widely debated in the national and international, general and special-interest press, giving it good credit and praising it as an example of innovative science policy. The results of this international attention can be seen in the many requests for information and cooperation which — above all — the nine so-called "Excellence Universities" could register. On the other hand, these universities had far fewer problems in gaining access to and starting new forms of cooperation with the world's most renowned universities, success in the Excellence Initiative serving as a door-opener for them.

Strengthening of the research base

As I stated above, the total amount of funding was relatively modest in international terms, but it brought about nevertheless a significant strengthening of the research base, as the sum was divided up between a few winning universities. With this concentration of funds, these institutions experienced a considerable increase of their individual budgets, allowing them to set up new internal programs for research funding and for the promotion of young researchers. But it also allowed them to dedicate a certain share of the money as seed funds for high-risk research endeavours that — under normal circumstances — would have had no chance of being funded, but that nevertheless sometimes turn out to open up whole new fields of research. It is quite a new experience for German universities to be provided with the possibility of opening up new fields of research rather than cutting some of them back or struggling to maintain them.

Competition and Differentiation

The Excellence Initiative introduced a competitive element into the German research funding system: Universities had to decide whether or not to take part in the competition, and if they decided to do so, they had to prepare for it. Therefore, the Excellence Initiative kicked off a previously unknown move-

ment in the university system. Universities started to sharpen their profiles, strategic plans were set up and huge efforts made to increase research performance. For the first time in years, extra money was invested in the system — and not to be cut off at another end, but to be invested in research excellence, new structures and new positions. It added considerable dynamics to the German university landscape. Certainly, there are winners and universities that benefited only marginally or not at all from the Excellence Initiative. But it is by far more important that there was at last movement in one or other direction. Universities had to rethink their own role and where they wanted to stand in the future. These simple questions alone have led to a repositioning and to immense changes nobody would have previously thought possible in Germany.

Looking at the issue of differentiation from a European perspective, one just has to bear in mind that there are roughly 1,000 universities in Europe which define themselves as research-oriented institutions. Thus, Europe has a broad base in terms of research capacities. But, despite this broad research base, one key weakness of the European university system is that the number of truly world-class research institutions is not sufficient. We all know the limitations of rankings. But, if one considers the well-known (though debatable) "Academic Ranking of World Universities" conducted by the Jiao Tong University Shanghai, it turns out that only ten European universities are among the top 50 universities. From these ten universities, five are from the U.K. where things are slightly different from on the continent (Shanghai Jiao Tong University, 2008). Thus, despite its huge economic and scientific potential, the European continent possesses only a very small number of world-class universities.

This is not a particularly popular conclusion, but Europe has to improve in this respect. What we need is a careful differentiation of the European university system through increasing competition between universities by, for example, competitive research funding. In the longer run, we will then probably move to a system where a limited number of universities are truly internationally competitive, a large group of universities have a couple of departments with high performance, and a certain group of universities have a strong emphasis on teaching — comparable to the development that has been initiated by the Excellence Initiative in Germany. Nevertheless, many stakeholders in research and politics in Germany, after becoming aware of the possibly increasing differentiation of the university system due to the Excellence Initiative, have begun a discussion on whether this is the right path to follow. This proves that the Excellence Initiative represents a true philosophical shift, a reorientation in policy by introducing competition and, as a consequence, differentiation into the German university system.

Knowing that this process of differentiation is a difficult one, I think that we have to move into this direction if Europe really wants to make full use of its scientific potential.

CHALLENGES FOR THE FUTURE

Before pointing out some of the challenges German "excellence universities" have to face resulting directly from the Excellence Initiative, I would like to turn the issue more generally towards the overall design of research policy.

Research policy and open innovation

Universities depend on public funding and public support, and thus have to respond to the demands of the public. As an economist, I would say that universities have to serve the political market. Over recent years, governments, the general public and the business community have increasingly taken what you may positively call a utilitarian view of universities. In terms of research at universities, this means that universities are seen as institutions which should deliver innovation that can be used to develop new products or improve existing ones. This view is not wrong, but it contains several shortcuts. First, it entirely ignores the role of the arts and humanities and the social sciences. Innovation and new ideas generated from these fields need not necessarily result in new products, but can nevertheless have a direct impact on society.

The second flaw is that this view entirely ignores the nature of research processes at universities: The primary motive behind most research projects is not to find an idea for a new product, but to analyse a scientific issue, to understand certain phenomena and to find answers to scientific questions (Boulton & Lucas, 2008). The great challenges the world community is facing, like poverty and climate change, will only be resolved if scientists from every field do research on these issues. Only together, the sciences, the arts and humanities and social sciences can contribute to the cause. It is the universities' legitimacy to take care of these issues — and they need proper funding for it.

In other words, thinking in terms of the direct economic impact leads to a distorted view of the process of research at universities and the motives of researchers. It would be extremely helpful if a broader perspective could be established in the political and public debate. Therefore, I am strongly in favour of the idea of "open innovation" which is currently under discussion in European research policy. Originally, this means that no university and no company can claim or be sure to have contracted all experts in one research field. Therefore, it is important to combine internal and external ideas, as well as internal and external experts, to advance the development of new technologies or, in the case of universities, of new research findings. The structure of the innovation processes is changing from a "closed" innovation model, in which research and development are tackled completely within organizations, to an "open model" in which ideas are generated and sought from different sources (Chesbrough, 2003). European universities have a common interest that this concept becomes a key part in the overall formulation of the European research policy.

But to establish the right atmosphere for this idea of "open innovation", universities need to set the right frame with incentives and challenges directed to the researchers. The Excellence Initiative is one key element in this framework of incentives and challenges, rewarding new and daring ideas and approaches in research that have been set up by a team of researchers inside and outside universities.

'Arms race' and political interference

Nevertheless, German universities also have to cope with some problems arising out of this new scenario of competition. One of them that has developed, especially after having digested the first results of the Excellence Initiative, is the "arms race" that some of the German federal states are now putting into practice. Not having been among the winners in the first place, some state governments have started to put great efforts into preparing some chosen universities for the second program in order for them to come out successfully. With a maximum of 12 universities probably being admitted as Excellence Universities and with nine existing ones, a fierce competition until 2012 will begin in order to remain with or gain the status of an Excellence University and receive the additional funds.

Tensions between and within universities

Another problem caused by moving away from the egalitarian system is the rising tension across and within universities. The institutions that will not be rewarded with the label "Excellence University" — and that will be the majority — need to develop perspectives and strategies in regard to their self-conception. As described above, each university has to find its place in a differentiated science landscape and this will not happen without severe friction and tension. Similarly, universities that have gained a share of the funds in one of the three funding lines have to cope with severe tensions between the fields of research within the universities. There are some departments that have gained considerable extra funding, enabling them to attract excellent researchers, bringing about new excellence, whereas there are others that have to cope with severe budget constraints and struggle to maintain a certain level of quality. These disparities being all against the egalitarian scenario described above, universities need to develop strategies to foster excellent research without creating tensions that will harm the institution as a whole.

The role of teaching and education at universities

Another important question that has to be handled is the role of teaching and education at universities, having to deal with the political and public demands to considerably increase the number of students at universities. The Excel-

lence Initiative has been developed to promote excellent research and, actually, there is little benefit for students. This creates an issue in terms of legitimacy and perception. The label "Excellence Universities" has attracted a great number of students, especially in the fields that have been rewarded Clusters of Excellence and Graduate Schools, without providing special treatment for them. Apart from being taught by renowned scholars who often only have to give reduced hours of lectures, there are, in principle, very few advantages for students. Therefore, it is very important for universities to emphasize their educational role in the future. If the above mentioned reasons why research should be conducted in universities are taken seriously, then we have to make sure that talented students who will be the researchers of the future find excellent conditions at our universities.

CONCLUSION

In the past five years, the German universities have seen three major changes that have shaped their future prospects significantly. With the so-called Bologna process, Germany and the other member countries of the European Union introduced Bachelor and Master degrees, with the goal to enhance transparency and mobility in the science system, even if it will take some time to reach this goal. Furthermore, the critically discussed initiation of a tuition fee changes not only the budget of universities, but also the way students plan their studies.

But the major change is the Excellence Initiative, bringing about a much needed reform process that leads to differentiation and thus an innovative university landscape. This process, which started three years ago, has not yet ended. Even universities that did not participate in the first round are now realizing that — in order to secure their future — they should at least take a stand and decide in which league they want to play. The Excellence Initiative has moved the role of universities and their quality to the centre of discussion.

Therefore, all stakeholders and key players of research should promote that increasing research and university budgets is one of the key elements to initiate and carry forward innovations. It is now that funds have to be invested if the European countries want to take a leading role in innovation and progress at the outcome of the global economic crisis, with a well-trained workforce being allocated to future industries and markets, and with the best scientists conducting research in their universities.

For the continuation of the Excellence Initiative, it is crucial that the budget will be raised — as announced — from 1.9 billion Euros to 2.7 billion Euros, as the funding of new projects and strategies, as well as the continuation of already existing ones, will have to be decided in 2012 (Verwaltungsvereinbarung zwischen Bund und Ländern, 2009). In order to give excellent

projects a fair chance to be financed, universities need a considerable increase in funding.

Chances are good that at least a few German universities enter the league of the world's top universities if the ideas behind the Excellence Initiative are continued and if the German science system will admit and finally be able to break with the egalitarian tradition.

REFERENCES AND FURTHER READING:

Boulton, Geoffrey & Lucas, Colin. (2008). *What are Universities for?* Leuven: LERU.

Bundesministerium für Bildung und Forschung. (2005). *Exzellenzinitiative und Pakt für Forschung und Innovation starten*. (Online). Berlin: Pressemitteilung 147/2005. Available at: http://www.bmbf.de/press/1505.php. (Accessed 9 September 2009).

Chesbrough, Henry W. (2003). Open Innovation: The New Imperative for Creating and Profiting from Technology. Boston: Harvard Business School Press.

Communication from the Commission to the European Council. (2006). *Implementing the renewed partnership for growth and jobs. Developing a knowledge flagship: the European Institute of Technology*. (COM [2006] 77 final). Brussels: Commission of the European Communities. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0077:FIN:EN:PDF. (Accessed 9 September 2009).

Deutsche Forschungsgemeinschaft DFG. (2009). Available at: http://www.dfg.de. (Accessed 9 September 2009).

Eurostat. (2008). *Key Figures on Europe 2007/2008*. Available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/. (Accessed 10 August 2009).

Fogarty International Center. (2008). Marmot assails health disparities. *Global Health Matters*, (Online). 7 (6), p. 7. Available at: http://www.fic.nih.gov/news/publications/global_health_matters/ghmnov-dec2008.pdf. (Accessed 9 September 2009).

Hinderer, Walter. (2007). Die deutsche Exzellenzinitiative und die amerikanische Eliteuniversität. liberal Verlag Berlin.

LERU. (2005). Competitiveness, research and the concept of a European Institute of Technology. Opinion. Leuven: LERU.

LERU. (2006). Purpose, structures and function of a European Institute of Technology. Commentary. Leuven: LERU.

Schultz, Tanjev. (2007). Der lange Weg zur Förderung. *Süddeutsche Zeitung*, 16 October 2007. Available at: http://www.sueddeutsche.de/jobkarriere/817/421579/text/. (Accessed 9 September 2009).

Shanghai Jiao Tong University. (2008). *Academic Ranking of World Universities*. (Online). Available at: http://www.arwu.org/rank2008/EN2008.htm (Accessed 9 September 2009).

Verwaltungsvereinbarung zwischen Bund und Ländern — Exzellenzvereinbarung II — 24. (June 2009). (Online). Available at: http://www.gwk-bonn.de. (Accessed 10 August 2009).