

Keynote Address by

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Europe's wealth lies in the knowledge and skills of its people. That is the key to growth, employment and social cohesion. This sentence is found in the Berlin statement that the heads of EU Member States published last year on the occasion of the 50th anniversary of the Treaty of Rome. This is the good news that talented people are seen as the core factor for development. The leaders of Europe realize that technocratic concepts, debates about money and structures are not going to help us. Developmental processes, the source of future prosperity, questions of cultural identity – all that has to do with the perception of people, their talents, their potential and their hope. It has to do with encouraging the next generation to learn and achieve, and demands an understanding of education that is based on a central experience – the most important experience of every young individual – the experience of being needed. Before all questions of finance, structures and curricula, what is important for young people is this experience of being needed, of being consulted, of knowing that their achievements and talents are recognized and that the fostering of those talents are taken seriously.

Also connected with this is the experience that the individual is of the utmost importance. That is why fostering elites and the disadvantaged are not alternatives but the two sides of the same coin. And it is my experience that if you cannot manage the one, you cannot manage the other: for both individuals – the talented and for those who have difficulties in pedagogical terms – it is essential to consider the individual. And this is an interesting political maxim: to provide the environment that allows individuals to be themselves, to foster freedom, not to regulate everything. Pedagogy is not a body of rules, it is an art. This may sound vague but I will elucidate what I mean.

Everyone complains about schools and about the next generation, and believes that previous generations were better. Those who believe that are just getting old. It is my experience that young people today can be encouraged and motivated just as much as was the case for previous generations, and my impression after visiting schools and universities is that the young generation is especially earnest, much more earnest than my own generation. They are particularly motivated because they realize that the educational system is facing the greatest challenge ever: globalization and its effect on education, science and research.

To answer the question of how education and research systems must be developed in a world of global competition, we need to look at the entire educational biography of our young people. In all European countries we have to consider how the educational process can develop – from the beginning of an individual's education to the life-long task of learning. What steps do we have to take? What does modernizing the educational system mean? Modernization steps, no matter where they are going to be implemented, can only be carried out, of course, if they are oriented towards international or, at a minimum, European standard. As a convinced federalist I would like to emphasize that federal structures contribute to a free and democratic political system and require local independence. Modern federal systems, however, are also legitimized within an international context. That is why local independence is essential in universities and in schools. Responsibilities must be clearly defined; common goals and strategies are necessary.

I believe that the most important modernization process in the national education systems in Europe – especially in Germany because it has been neglected in the past – is what we call pre-school education. Children in Germany have been starting school too late for too long; too many children whose mother tongue is not German do not understand their teachers on the first day of school. And too many of us have ignored the situation, thinking that the problem would take care of itself. Today we know that it is



essential to start early. We know that a culture that does not see learning and achievement in opposition to a happy childhood is the prerequisite for a society that can offer equal opportunities; it is the prerequisite for a better educational system that takes children seriously and increases their opportunities by teaching them when they are most receptive.

No matter how educational systems in different countries are organized and structured, modern systems are characterized by a greater focus on concepts that attend to individual development. In medicine we talk about individualized therapies: the more serious the disease, the greater the need for individualized therapies. The same holds true for education – for both the highly gifted and the handicapped. Financing and the structures of educational systems have always been the subject of debate, but much more important and decisive for the modern, high-quality educational systems are matters of substance, namely, the culture in which learning takes place. Do the methods motivate children and young people? Is the interrelationship between school, teacher and pupil appropriate? That is why I hope that our universities – at least some – recognize that teacher education is not just a duty they have to carry out but that pedagogy, teacher training and the research connected with it is seen as a workshop that moulds future society. Schools and universities are the future workshops of society. And this is why the education, training and further education of teachers require such creativity and substance.

We need to develop an open educational system, a system where one phase builds on the previous one, a system which is not isolated from its social context and processes. And every reform must be measured according to whether it is internationally competitive and promotes mobility. Federal structures are modern, but if federalism prevents mobility it is not acceptable.

With respect to research and academic systems, the important change and reform that is now being carried out is bringing science and the economy together. The most important aspect of economic policy is innovation, and research policy involves implementing what promotes innovation. Research policy and economic policy – they are both determined by what strengthens innovation. The results of studies investigating where it is worth investing and what factors influence investment in Germany show repeatedly that Germany is ranked high with respect to innova-

tion. The task that we face is to keep this small lead. And we are just beginning to do this – we have not yet implemented a tax system that is innovative and takes into account issues such as tax relief for research and development and other tax incentive systems.

One step has been taken in the right direction – the ranking of German universities. This “excellence initiative” has resulted in catapulting these selected German universities onto the international agenda. The percentage of foreign students will grow especially at these universities. In just a few months the co-operation agreements with universities all over the world have increased dramatically, resulting in a truly international university landscape. Related to this fact is an important structural limitation: one of the great weaknesses in Germany is the organizational separation between research carried out at the university and non-university institutions. These institutions must be brought closer together so that they can profit from each other. The *Karlsruhe Institut für Technologie* is a recent example of the fusion of a large research institute and a university, a location where 8,000 scientists will be working together. In comparison there are only 3,500 at the Weizman Institute of Science in Israel. The potential for research is enormous here, and it will most certainly lead to further structural changes in other regions in Germany.

Competition and talent always means placing emphasis on research and excellence and that means taking a critical look at the quality of instruction. Excellent teachers and excellent research are not alternatives; they are again two sides of the same coin. To ensure that this is true, we have to internationalize our university studies. This is being implemented within the context of the Bologna process in which 64 countries are involved. This initiative can promote mobility but it must be carried out in a way that actually leads to mobility. It is a great opportunity for new generations to experience an international university framework, in which a semester at a foreign university is more than what it once was – a nice semester abroad that cannot be incorporated into the students’ course of studies in Germany.

Internationalization of the course of studies means having a different relationship between students and professors. In Germany there are still too many regulations determining how many students per teacher are allowed in every course of studies. In the course

of modernization these regulations must be abolished. What we need at our universities are more possibilities for the encouragement of students, of feedback, and the interest of the old in the young and vice versa, which according to Schleiermacher is the essence of education and research. An atmosphere must be created where this interest is evident. The famous sentence of professors when lecturing first-semester students in engineering, “I’ll be flunking half of you”, is not appropriate when we have a shortage of 80,000 engineers which, according to demographic studies, will reach around 150,000 soon. Turning to other countries to recruit engineers is not an alternative because everywhere in Europe and the United States there is also a shortage. The above-mentioned attitude of engineering professors is unacceptable if we want to develop scientific educational systems. The success of scientific educational systems and the success of a university rely on a cultural atmosphere, not just details of reform, but an atmosphere in which people are taken seriously and in which different disciplines show interest in the work of others. Innovation does not usually arise at the core of a subject but in its interface with other disciplines, where the representatives of the different subjects and disciplines are interested in each other and in inter-disciplinary work.

The partnership between science and the economy is essential for innovation – the excellence initiative, the top cluster competition here in Germany and other initiatives of high-tech strategy that we have been successfully working on for the past three years together with the federal government and the *Länder* are moving in this direction. If Germany’s high-tech landscape is to have a great potential in 10 years and if we are to maintain our market leadership in various areas, will still depend to a large degree on whether we succeed – by creating innovation alliances and strategic partnerships – in achieving an investment of three percent in research and development in Germany and in all EU Member States, because we are not only competing within Europe; Europe is competing with the whole world.

We are too hesitant when it comes to investing in research and development, too hesitant in what companies and the state undertake. Those who believe that the foundation for growth and employment is based on more and more transfer payments of the classical sort are deluding themselves. This will not ensure the future for coming generations; it will only

create more dependency. The foundation of a modern economic policy and a policy that is based on the idea of innovation is, in Ludwig Erhard’s words, “to create areas of personal freedom”, not to create a society based on dependency but based on independence. And that is the reason why I think it is sad that doubts are widespread about how we can manage to invest 3 percent of our budget in research and that we have to fight with the Finance Minister over whether we can appropriate 300 to 500 million euros for research in a country with 80 million people. In Brazil an oil field was discovered that will yield 500 billion dollars in the course of time, and the government has decided to invest this money in education and research. It is with countries like this that we are competing. Developing countries know that investment in education and research is the key to future development and opportunities for future generations. Europe still has to learn this. Agricultural subsidies will not secure our future but a shifting all over Europe, step by step, to research and development is the answer. This means an increased capacity for investment – also on the part of companies – in Europe.

Europe as a whole must foster and promote talent. “Brain drain – brain gain”: what this actually means is “circulation”. Not only money circulates around the world; globalization has led to people moving around the world and for the younger generation this is nothing new. For them it is a matter of course to live and work in other parts of the world. So I am not concerned that people leave Germany; I just want people to come to live and work in Germany as well. I want Germany to have an attractive position in this worldwide network, a position where it is clear why it is interesting to go to Germany, why it is interesting to study and work in Europe, where it is clear what special attractions we have that other countries do not have. This is Germany’s goal – to have a specific role in Europe’s profile, for example also as a driving force in research and development. Germany, in fact, is ranked at the top in terms of its expenditures for research and development. Thus we have the opportunity to play this role but we must ensure that we do not fall behind.

An idea of security and welfare – which in reality merely reduces the size of the cake – limits the prosperity of future generations, not only in terms of economic prosperity but also of cultural and intellectual prosperity, which is, of course, an essential part of the intellectual culture of a nation. This is why scientists

and scholars in the humanities have to participate in the intellectual debates of our society.

The sentence that I quoted from the Berlin statement can be found again in another context: the talent that can be developed in the sciences and research will become more and more necessary within the context of international politics. A great man of the twentieth century – Pope Paul VI – once said that “the new name for peace is development”. If this is right, then it means that international research development – if we take, for example, energy, health and nutrition, the central areas that research focuses on – and the question of progress in development processes will have a greater impact on how we succeed in utilizing new knowledge and insight for political decision-making. That is why I am so pleased that we will soon have a national academy of sciences in which the question of international political processes will play an important role. Knowledge and research now plays a more important role in the agenda of international politics than was in the past. That should motivate our government and others to ensure that Europe develops in such a manner that future generations will say that:

- Europeans see themselves as generators of talent,
- European countries take people seriously and they have developed from a tradition in which people are valued, and
- European countries focus their political energy and power on modernizing and developing education and research.

This is no longer only the task of the research minister but the central task of the government in general. And an essential part of this involves creating an open country that does not fear immigration and knows that “brain circulation” means opening the borders for talented people from all over the world.