

Translation

Speech by the Federal Chancellor on being awarded the
Royal Society's King Charles II Medal

London, Thursday 1 April 2010

Lord Rees,
distinguished guests,
Excellencies,
Ladies and gentlemen,

I am delighted to be here today at the Royal Society and to have the honour of receiving the King Charles II Medal. This is indeed a great honour – not only for me as Chancellor of the Federal Republic of Germany but also for the country I represent. I am pleased that the newly elected President of the German Academy of Sciences Leopoldina is also here, which indicates a certain amount of German-British congeniality as far as scientific collaboration in this worthy institution is concerned.

You are not, I hope, expecting me to deliver a scientific lecture – or you would be very disappointed. I shall instead concern myself primarily with the structural conditions necessary for good science. However, I should like to begin by calling to mind the fact that when the Royal Society was founded in 1660 the world around it was in a state of upheaval. With the establishment of trading companies, the 17th century experienced something similar to a first wave of globalization. More and more raw materials, goods, services and expertise were being exchanged. Technical progress was responsible even at that time for a rapid increase in global trade, even though crisis after crisis dealt it a heavy blow.

However, the 17th century experienced a watershed not only in material and economic terms. It also marked the beginning of the Age of Enlightenment, to which – I believe it is fair to say – we owe our contemporary way of life. There was a flowering of the sciences. We only need to think of Galileo Galilei, Johannes Kepler or Isaac Newton, to mention only a few of the outstanding, pioneering intellectuals. It was precisely during this period of upheaval with its far-reaching consequences that the Royal Society was founded – a child of its time, the

birth of a new way of thinking that also articulated the interest taken in the sciences by the political authorities.

This is, moreover, what the motto “nullius in verba” – “On the word of no man” stands for. Here the Royal Society stated publicly its determination to develop a new science, one based on experiment, one that never contents itself with quoting authorities. It also asserts the Royal Society’s prerogative to break new scientific ground and speak plainly and frankly without restraint or fear of offending those authorities. Today we take this for granted in science. However, at that time it meant an open break with the scientific philosophy that had hitherto prevailed. It was initiatives like these that established the natural sciences as we understand them today. The Royal Society was therefore a pioneer of our modern understanding of science.

Inspired and driven by a thirst for knowledge and an inquiring mind, those brilliant thinkers made groundbreaking discoveries, opened up new views of the world, broadened horizons and created new opportunities. Over the centuries the Fellows of the Royal Society have explained the world to us with their pioneering insights – whether into gravity, evolution, the electron, the double helix or other problems. I’ve just had the honour of looking at the Charter of the Royal Society and glancing at the list of Fellows from previous centuries. That in itself is a truly amazing experience, one which evokes a profound respect for their achievements. Robert Hooke, Michael Faraday, Charles Darwin and of course Isaac Newton, whom I’ve already mentioned, all feature in this awe-inspiring book. They were all pioneers of the sciences, people who wrote the history of knowledge, who were constantly breaking new ground.

Today we can count ourselves lucky that freedom of research is one of the basic rights of democratic societies. Perhaps sometimes we take these freedoms too much for granted. It is also true that when we do have freedoms we don’t always take advantage of them nearly enough. For this reason we should constantly remind ourselves that the freedom of the sciences is a basic freedom.

The beauty of science is this: no sooner has one found the key to the universe than new questions begin to emerge all over again. If I may say so, when I made the transition from life as a physicist and researcher to life as a politician, perhaps the biggest change I noticed was this: if one says the same thing twice in science it counts for nothing, whereas in politics it is an absolute requirement that one should repeat the same thing at least ten times over, until a

sufficient proportion of the population has really taken it in. What I mean is that in science the world is always in a state of flux, there are always new challenges.

Of course, these challenges also confront us today. Today we are faced once more with a period of globalization, one in which the supremacy of the countries that lived through the Age of Enlightenment is no longer to be taken for granted in the same way that it has been over the last centuries. On a trip to China, one picks up where the 10th century left off – rather than the 17th century. For in the world of the 10th century China was pre-eminent in science, and not just pre-eminent but responsible for defining the discipline. People there are saying: we want to return to this heyday of Chinese science.

We have to face completely new competition today, both in Europe and in the United States of America. I am of the firm conviction that we can only win the race, or be amongst the frontrunners, if we pool our efforts in Europe. Glancing again at the beautiful Fellows' Book of the Royal Society, it is clear that Europe existed as a vibrant reality not only in recent times. Alexander von Humboldt features just as strongly as Max Planck and many others. Which goes to show that scientists amongst themselves always recognized what was good and when it was necessary to join forces to produce something even better.

In the same way we today need – in the scientific as much as in the political sphere – cooperation between European states. Many projects can only be realized if we form multilateral, or at least bilateral, partnerships. Germany, it is fair to say, is keen to be involved in international scientific cooperation. Germany is also pleased that it enjoys a close relationship with the British sciences. I believe it is a constant source of enrichment for both parties and that it welds together our relations as a whole.

There is a close bond between Germany and the United Kingdom not only in the sciences but also in political and personal relations. I have just come from Chequers, where I had a meeting with the Prime Minister. Of course, we keep abreast of the entire spectrum of political issues through our regular exchanges within the common European framework and our work within the European Union. What most interests the public are those areas where we have not yet reached agreement. However, if we remind ourselves of the many areas where we have reached agreement, it is indeed an impressive array. We work together in international alliances. Today, of course, every political decision in any nation state is characterized by the fact that leaders can no longer think in national terms alone, but must always bear in mind the European Union perspective and that of the transatlantic community.

I have already said that we face a great challenge in terms of maintaining our lead position. Sometimes I am of the impression – I am talking about Germany here – that not everyone is sufficiently aware yet of the effort this will involve. This is why, during my term as Federal Chancellor, the Federal Government has repeatedly declared that the prosperity of a country such as Germany, with its scarce mineral resources, must be sought through investment in research, education and science, and this to a disproportionate degree. Moreover, part of the challenge for the Federal Republic of Germany consists in tackling demographic change over the coming decades, i.e. the dramatic shifts taking place in terms of age distribution. This means we must empower every young person, through education, to contribute his or her skills to the community: in other words, if you'll forgive the pun, we must fully exploit our human resources.

In so doing we need to work out how to structure educational institutions sensibly. Germany is a federal country, which presents problems that you in the United Kingdom do not experience. The Federal States are responsible for primary and secondary education, but of course the young people who are the products of those schools are also part of society as a whole, for which all tiers of government and the Federal Government itself are responsible. In Germany we have discovered – partly as a result of the PISA Study – that we need to become more competitive in the field of education. Above all, this means that our education system must produce better qualifications. This means in turn that we need overall to invest more energy and also more money in the education system.

In Germany we used to say that when a child starts school, then life begins in earnest. This kind of saying shows the deeply held assumption on the part of Germans that life is playful and lovely until one starts school, and then life becomes hard. Modern educational research has however acquainted us with the understanding – which I utterly endorse – that we human beings acquire knowledge from birth: furthermore, the processes of acquiring knowledge and educating ourselves afford us so much pleasure that in fact we should not notice the transition to school at all.

In future we shall, indeed we must, invest seven per cent of our GDP in education. The major challenge we face of integrating our immigrant population is another reason why this is imperative. I believe we have this in common with British society. The issue of how we achieve successful integration is one which we have not yet completely resolved, and which

might be a suitable object for many more in-depth discussions between educationalists in the United Kingdom and Germany.

We have committed a lot of resources to increasing interest in mathematical, engineering and scientific training courses, and will continue to do so. We have too few students, rather than too many, in these subjects. If we wish to maintain prosperity and living standards in our countries, it thus behoves us to encourage the enjoyment of science education. Taking a degree in the natural and engineering sciences is considered to be rather precarious. In terms of career prospects, experience has repeatedly shown that whilst the take-up of people trained in these professions is very good during economically buoyant periods, during a recession these people will experience considerable difficulties in finding a job. This is why it is also the job of business and education institutions to ensure there is a permanent shoring up, so to speak, of career prospects for graduates from the mathematics and natural science disciplines. Scientific knowledge has a very short sell-by-date, which is why we cannot afford to have gaps in the provision of qualified scientists.

We have made progress here, even though there is an attendant problem which perhaps all developed industrial nations have to address: the tendency to view the natural sciences with scepticism, combined with the exaggeration of certain risks, means they meet with a lower degree of acceptance. I believe this throws down the gauntlet to the scientists to open up to the rest of society, to speak a language that ordinary members of the public with an average secondary education can understand. The expertise, the specialist knowledge and specialist terminology are all well and good, but the great scientists of their time have always been able to present their work in layman's terms, so that it becomes accessible not only to those in neighbouring disciplines but also to people without a scientific background. This is why in Germany I am constantly calling for the sciences to open up to society – this is precisely the role of the Royal Society – and engage in a debate with society on the natural sciences.

We also, of course, have the challenge of providing sufficient resources for the sciences. Naturally, the priority here must be to provide adequate funds, but also appropriate organizational structures. The speakers before me have already mentioned the fact that in Germany we have a quality infrastructure for the sciences, with the Max Planck Society for the Promotion of Sciences, the research institutes and also the academies. What has always proved difficult in Germany, because of our federal structure, was the establishment of a National Academy. We are delighted that Professor Jörg Hacker, as President of a National Academy – the Leopoldina Academy – is here today. It has taken decades to establish such an academy. First

it took German reunification and secondly it took a good Federal Minister of Education and Research in the person of Annette Schavan to achieve this. She has quietly managed to circumvent the danger that the regional academies might feel relegated to the sidelines by the emergence of a central body in Germany, one which can act as dialogue partner, for instance with the Royal Society. We are pleased that this cooperation is working so well.

In addition we have developed a high-tech strategy for the organization of science in Germany – in particular the natural and engineering sciences. We have conducted an analysis across the whole gamut of scientific research to see where Germany stands and what needs to be done if we want to be world leaders. In so doing we have naturally concentrated our efforts in certain areas. One of these is undoubtedly energy research, which is also linked with the issues of climate change. I am very pleased to be in the place today where the Stern Review was launched – a significant contribution to the issue of how we confront climate change.

I believe that since the Copenhagen Conference we have to some extent been in a state of crisis regarding the whole question of climate change and how we overcome it. To recall a Chinese saying, of course we want to turn the crisis into an opportunity. In order to do this it is imperative that we examine very closely the scientific basis for climate change. Utterances by the IPCC caused irritation because they contained exaggerations as to the extent and effects of climate change. The danger here is that they could produce the opposite of the desired effect, by utterly devaluing the significance of climate change, and this above all in times of financial stringency. This is why I believe it is incumbent on all scientific institutions to communicate the problem of climate change attributable to human activity in a rational and realistic way, in order to generate once more an acceptance, or greater acceptance, of the need to address it.

The Stern Review was so important because it posed the question in a quite different way: not in terms of the cost and consequences of doing something about it, but of the cost and consequences of doing nothing. The juxtaposition of these two alternatives impresses upon one much more the urgency of the tasks that lie ahead.

I believe the United Kingdom and Germany are working together in an exemplary way, politically and scientifically, both in energy research and in creating the necessary international framework for addressing climate change. We share a great deal of experience in developing energy supplies with the aid of renewable energies. In Germany a highly critical debate is taking place concerning the energy mix – of renewables, nuclear energy, gas power

stations and coal-fired power stations – that is necessary for our country. It is very interesting to observe the developments here in the United Kingdom too, where perhaps the future of nuclear energy is not being so furiously debated in the public arena as it is in Germany. Here an exchange could certainly be most fruitful.

A second major topic that is also indirectly related to the issues of climate change and resource shortages is that of mobility, i.e. electromobility and other related aspects. Here, too, we must and we shall cooperate very closely in the future. Of course, for an ageing population such as we have in Germany, for instance, health research as a whole is a major topic. Medical technology, its development and the whole spectrum of information and communication technology are equally important issues.

We will constantly have to make it clear to the public that our standard of living can only be maintained in the future if we give sciences, research and their application their proper place in our societies. It is particularly important here, of course, to fight for basic research to be given its rightful place, without its being constantly required to report back with results but, rather, allowing it to be conducted for its own sake – given that the ensuing discoveries can scarcely be predicted by annual plans. If a topic has turned up in a newspaper supplement or similar, then I always say: if politicians think they can predict the course of scientific progress then that really is cause for scepticism, and we should not assume they have accurately grasped the way things are going. I think it is fair to say that, even in the scientific publications of certain disciplines, there is something of an addiction today to the belief that if you present discoveries in a quasi-popular way, you are describing the trip of an epoch. What is important, however, is to look at all fields of basic research and not be too ready to believe that it is politically possible to assign a hierarchy of importance. Owing to my active experience of basic research in the past I, at any rate, shall always fight a corner for basic research.

Ladies and Gentlemen, accepting the place of science in society also implies accepting new scientific developments in an unbiased way. I have mentioned nuclear energy, but I could also talk about green biotechnology in Germany – an issue that is extremely difficult to communicate, especially in a country that has enough to eat. However, it is no easier within the European Union, for here the preoccupation is with the issue of how to avoid over-production in the agricultural sector, rather than with the number of people starving in the world and the blessings green biotechnology could potentially bring. In so-called red biotechnology we have

seen acceptance where people can perceive the benefits for their own health. Perhaps we can take this as an example of how green biotechnology can find more recognition internationally.

Natural science in a modern world also involves international cooperation. There are projects that we can no longer carry out alone. Within the European Union I have been working hard to shape the European Research Council in such a way that it judges truly on merit, not according to which countries from which region of Europe are the greatest contributors to a project. We cannot take this approach for granted in Europe. Neither is it easy to secure a permanent future for the activities of the European Research Council. However, I believe it is incumbent upon us to keep hammering the point home, in our political debates also, that science only deserves sponsorship if it truly produces top class results. Here we must not make regional compromises – for then Europe would be weakened as a whole – but rather we must pursue excellence. This is a truth we have to face.

The same debate is going on in Germany. For instance, in Germany when we drew up a list of universities of excellence, all of the selections were from the south of Germany. Naturally, the north was not pleased. However, the problem is not solved by pouring money out on an equal-shares-for-all principle, but rather by saying to the universities in the north: if you become like the universities in the south then you too will have your chance.

Ladies and gentlemen, of course we also face the challenge in both politics and society of creating the infrastructure to allow scientific inquiry to take place and scientific insights to be implemented. The application of modern technologies is the driving force behind the desire to make further technological progress. This applies as much to renewable energies as it does to broadband provision and also, of course, to the issue of intelligent energy supply networks and much more. An exciting challenge is coming to the fore, as we basically find ourselves once more in an age not dissimilar to the golden age when railway lines and trams were being constructed. At that time it was, of course, to a large extent the job of the public sector, whereas today we rely heavily on private investment.

I believe it is absolutely the job of politicians in each country to ensure similar living standards for all sections of the population. If I am talking about Germany, this means making provision, above all, for both urban and rural regions alike to reap the benefits of the new technologies. This presents considerable problems. I imagine that it also presents problems in England, having seen the beautiful English landscape, which clearly does not consist solely of

conurbations. The issue of rural development is also dependent, of course, on the issue of modern infrastructure provision.

Ladies and gentlemen, we face the additional challenge of ensuring that our strategies for growth, which we need in order to preserve our living standards or even improve them, are in keeping with the laws of sustainability. The development of industrial societies has been strongly marked by the tendency to consume more resources than are returned to nature. Of course, this will no longer be feasible in a world where the advance of the emerging economies is accompanied by a dramatic increase in their growth rates. It is for this reason that we would also do well to expend the force of our scientific knowledge in developing a thrifty approach to the use of resources and applying the notion of sustainability, an idea that originated in Germany. The term ‘Nachhaltigkeit’, sustainability, has its origins in the history of German forestry management, where the management and cultivation of forests began to be organized in such a way as to maintain a healthy balance between tree felling and tree planting. This principle got as far as the Rio process, but is unfortunately still not upheld worldwide. However, this should also be a task for the scientific community.

Ladies and gentlemen, in all the areas I have listed and explored – from a German perspective, of course – the Royal Society has constantly displayed exemplary qualities. You invigorate training in the natural science and technical disciplines. You are active in promoting young talent and have chosen to make this your strategic priority. I believe that is exactly the right way forward. For who better to promote the sciences than the scientists themselves?

Ladies and gentlemen, the sciences thrive on curiosity and the ability of individuals to make independent judgements for themselves. Scientific progress comes about because we are constantly questioning what we think we already know. If we want to avoid being left behind, if we want rather to make constant progress on into the future, then scientific activity is the fundamental prerequisite.

Once again in keeping with its motto, the role of the Royal Society in policy consultancy goes back a long way. The Royal Society published its first report as early as 1664, and has retained its excellent reputation as an independent voice for science in the United Kingdom, Europe and international politics to the present day. In your 350th year, too, you have set the course for progress. In founding the ‘Science Policy Centre’ you have once more expanded the range of your activities. With the Centre the Royal Society should establish itself further

as the hub of debate surrounding the links between science, society and politics. Perhaps there's an idea for our National Academy, the Leopoldina, too.

Of course, it is not only the presence here today of the new President of the Leopoldina, Professor Hacker, that delights me, but most particularly the close cooperation that exists between our two institutions. Both the Royal Society and the Leopoldina intend to equip themselves even better for the challenges of policy consultancy. Once we had a national academy at last, I was determined to place policy consultancy on a new footing in Germany, in line with the British model. In future we as Federal Government intend to consult in this mode, with the Leopoldina as well as the German Academy of Science and Engineering – *acatech* – a technical academy that also enjoys national status.

This year the European Academies Science Advisory Council, an association of national academies from the EU countries, will move from the Royal Society in London to the Leopoldina in Halle. Naturally this is a source of great pride for us. I must say it was a source of great amusement in 2007, when we held the G8 Presidency, that Germany did not yet possess a national academy and was, in fact, the only country that had no obvious dialogue partner. However, even then we had the foresight to choose the Leopoldina, which has proved to be the right choice.

Finally I would like to express my sincere gratitude to you once more for affording me today the dual honour of speaking to you and receiving the King Charles II Medal. At the same time, of course, it is for me a painful reminder of what I have forgotten since I was actively engaged as a scientist. Notwithstanding this it is a great challenge for me to convert the knowledge of the general contexts for scientific work still retained in my head into political action. This is a continual source of enjoyment for me. One can shape policy, set priorities.

With the Federal Government set to spend twelve billion euro more on science and education in this legislative period, this also gives us the opportunity to set the right priorities in terms of practical implementation. I beseech you scientists: don't shy away from telling us when you think we are spending money on the wrong things. For providing funds is one thing – using them wisely is quite another. It is, therefore, fair to say that science and politics must draw closer in dialogue rather than further apart.

Thank you so much for inviting me here today.