65th Annual Meeting of the Max Planck Society
Speech by outgoing President, Peter Gruss
for the festivities in
Munich on 5 June 2014

- Check against delivery -

Ladies and Gentlemen,

The Asturias Award for the Max Planck Society's efforts in international cooperation, which I had the pleasure of accepting in Oviedo together with a number of junior scientists, was a highlight of twelve years in office – and not the only one by a long shot!

Today I would like to take you with me on a personal voyage "Back to the Future"! You may remember the 1980s film trilogy of the same name in which the main characters Marty McFly and Doc Brown changed the future by making just a few small changes to the course that had been set in the past. In the first film, Marty even jeopardises his own future birth! Which goes to show, that if you're setting the course for the future, you need to know your goal!

Taking on the office of President of the Max Planck Society means taking on responsibility for being on the right track at the right time to steer this venerable research institution into the future successfully.

The chain of office bearing the names of all Presidents, including those from the Kaiser Wilhelm Society, conveys almost the physical weight of its tradition. Presidents like Adolf von Harnack, Max Planck and Otto Hahn – to name but the three founding fathers – between them set the crucial direction. Harnack formulated the principles governing our structure and thereby gave us a solid foundation. Max Planck and Otto Hahn managed on the grounds of their academic renown and personal integrity to build up the Max Planck Society after the Second World War. This was anything but a given at the time, in view of the history of the Kaiser Wilhelm Society under the Nazis.

Today's Max Planck Society owes its ageless vitality and dynamism to the Harnack principle above all else. It is on this basis that we appoint researchers with the capability and creativity to develop new research fields at the 83 institutes we now have in Germany, Italy, the Netherlands, Luxembourg and the USA. It's the accomplishments of these renowned scientists as well as those of the young women and men who come to join us as junior scientists from all over the world that are the foundation of the Max Planck Society's reputation. Research is carried out at our institutes, and so it is no wonder that it's less the Max Planck Society and more the "Max Planck Institute" that you Ladies and Gentlemen, get to hear of in the German public – even though the whole of the Society is meant. In the USA we're simply known as "Max Planck"; in China it's "Ma Pu".

The President – whom some in China have been known to refer to as "Mister Max from Germany" – has a mandate to safeguard tradition while enabling innovation. The dynamism and the constant process of renewal that the Max Planck Society must permanently keep in motion imply that the person who holds the office of President must also be changed regularly. Our statutes infer that, after twelve years, the marginal benefit of the experience gained in office is lower than that of fresh ideas. Which is quite right!

I enjoyed fulfilling the President's mandate and felt, for the most part, privileged to do so. I would like to thank our Senators for having expressed their confidence in me twice and having entrusted something so precious to me for such a long time. And I thank you, the Scientific Members, my dear colleagues, for your enduring support. Most of all I thank the Vice

Presidents for their untiring efforts and their loyalty: Herbert Jäckle, Kurt Mehlhorn, Rüdiger Wolfrum, Jürgen Baumert, Günter Stock, Stefan Marcinowski, Wolfgang Schön and Martin Stratmann! We will, of course, be hearing from the latter before the night is out…

Special thanks go to my family, and most especially my wife Barbara, for the support they have given me, and also the understanding they have shown for the demands of the office. And all of you, ladies and gentlemen, I thank you for the interest, the kindness and the support which you have shown the Max Planck Society, and which I have had the privilege of feeling myself!

But back to our voyage through time: Don't worry, you're not about to hear a detailed travelogue of the kind that only fails to tire out those who can spot themselves in the holiday snaps! I plan to recount distinctive junctures and waypoints, presenting only those that I see as having been particularly significant for the development of the MPG. You will find a brochure summarising the main points at the entryway if you'd like to take a look.

Ladies and gentlemen, in order to set course, one must know one's goal. When I took office, the Max Planck Society had long been the undisputed pearl of basic research in Germany. I have my predecessors to thank for this wonderful starting point! And that is not said lightly. With two terms in office behind me, I know what it means to live up to the challenges of one's day. I set myself the goal of developing the Max Planck Society to such as stage as to ensure that when anyone thought of the world's best research institutions, the Max Planck Society would always be among them. And that calls for an international, interconnected and competitive organisation which stands at the cutting edge of science. And exactly where the cutting edge is, is decided solely and exclusively on a global scale.

So I set course firstly for continuous renewal, secondly for international positioning, and thirdly for putting our knowledge into application even better than before.

I think it might be helpful, especially for those of you who are not so familiar with our internal workings, to understand why these priorities are essential for the Max Planck Society.

Point 1: Continuous renewal begins with the appointment procedure!

We focus not on disciplines, but on people with creative ideas. That is why almost every new appointment entails the scientific reorientation of a department and the evolution of an institute. I have interviewed more than 200 interesting and impressive people for appointments, many of whom I will never forget. If several Directors' posts become vacant at the same institute within a short space of time, we often use that to completely refocus the institute. As a result, the Max Planck Society enjoys a great deal of flexibility in that we can give an institute a completely new focus free of the constraints of any particular discipline.

This continuous renewal process from within has its price: Since we seldom appoint successors in the same scientific field, new Directors cannot use much of what is already there. To cite but two examples: There are now magnetic resonance imaging machines located in our Institute for Human Development; and the former Max Planck Institute of Economics will soon house molecular genetics labs. For experimental researchers in particular, we often have to spend millions on high-tech equipment and conversions. And we can spend three or four times that for a certain time period if an institute is being completely repurposed.

When we make an appointment, it's not only about the future of the institute; it's always about our entire research portfolio and the future of the Max Planck Society as well. Each institute is part of the organism that is the Max Planck Society, which evolves out of the collaboration between our scientists. Which is why I placed the process of renewal on a Max Planck wide basis from a structural perspective, too: during my term in office, all three Sections either set up Perspective Commissions or expanded their existing Commissions into think tanks. They are

continually coming up with new ideas and concepts – concepts like intelligent systems and empirical aesthetics. We have brought these scientific concepts and ideas from all three Sections together in the newly established Perspective Council comprising the President, Vice Presidents and the Chairpersons of the Sections and the Scientific Council. The entire Max Planck Society thereby discusses and promotes new research topics, as well as the concepts for the evolution of existing institutes and for new and intersectional institutes and plans – shaping their future in this way. I thank the Section Chairpersons and the Chairpersons of the Scientific Council for their constructive teamwork!

Together, we have substantially expanded our research spectrum: In addition to the 15 institutes we realigned or to which we added new topics, we were able to establish nine new institutes, including those in the field of Biology of Ageing and the Science of Light here in Bavaria.

The CAESAR research centre and the Ernst Strüngmann Institute also came under the umbrella of the Max Planck Society. Their Directors were appointed through our appointment procedures and are also Scientific Members of the Max Planck Society.

For new institutes, the federal states that play host to them also gave us more than 200 million euros in total for buildings and initial equipment. It is this that enabled us to establish the new institutes in the first place – thank you very much!

I thank the federal and state governments for having afforded us planning security over the past ten years with the Pacts for Research and Innovation: the security of knowing that we can expect a rise of three percent and, most importantly, now a growth factor of five percent a year for five years. Thank you for having resisted the urge to link this rise with tight constraints or even micromanagement.

There is no money in the world that could make up for losing our autonomy. And for good reason: our autonomy is crucial to our success. The Max Planck Society combines the expertise of more than 5,000 top-class scientists, including currently nine Nobel Prize laureates. They are advised by a total of 800 scientific advisors from the world's best research institutions – including an additional seven Nobel Prize laureates! Who, if not they, knows the scientific challenges and can gauge which areas still contain the buried treasure of new knowledge?

Don't get me wrong: I have the greatest respect for the work of the ministries and government offices. But that's partly why I am such a committed fan of our division of responsibility and our task sharing!

I am fully aware that policymakers are responsible for the proper and efficient use of taxpayers' money. But perhaps it will relieve you to hear of some examples of private individuals who've left their fortune to the Max Planck Society for the benefit of science. Andreas and Thomas Strüngmann would not likely have entrusted their institute to the governance of the Max Planck Society if they weren't convinced of its success. The same goes for other patrons in Germany and abroad. For their trust and generosity, I thank them sincerely!

In order to do justice to our specific mission, the Max Planck Society currently needs its annual budget to rise by four percent. The figure fluctuates depending on factors like increases in pay rates, energy costs or consumption, as well as international competitive pressure. It's not only the definition of cutting edge performance that's decided on a global scale, but also the size of the necessary investments!

If I'm correctly interpreting some of the political messages, we will have to anticipate the end of budget rises in real terms in the coming years. That is of genuine concern for me when I wonder about how much latitude we will have to start something new or to expand on agreements from the Pact for Research and Innovation. My experience of recent years tells me that budget growth of less than four percent could force us to freeze our activities at the status quo! The dynamism which the Max Planck Society has been able to build up in recent years

would stall.

Ladies and gentlemen, it's not least the way our funding is split, half from the federal government and half from the 16 federal states, that guarantees us considerable scientific autonomy. No one party alone can set the agenda. This is partly why I am sceptical of the recent decision stipulating that the federal government alone shall find the money to cover the increases in the Pact for Research. In the short term, it does not change our funding split. But the question is, can the largest funding provider resist the temptation, long term, to distinguish itself not only by increasing the percentages it pays, but also by expanding the scope of the constraints it imposes? These would then affect not just the percentage rises, but the overall budget. The federal states have, in my opinion, been wise not to give up the existing funding system as yet. Because the way our funding is split is also one of the reasons for our institutes being spread across many different locations.

This is not only positive: Every time I visit the Weizmann Institute in Israel, I envy Dany Zaifman his campus where people live, do their research and use the central infrastructure building, all within walking distance.

But still: there are advantages to be had from the many different locations we occupy. Small and flexible entities like our Max Planck institutes are particularly efficient when it comes to creative research. After all, they do not stand alone. Over the course of our history we have built up expertise in leading geographically distributed institutes as Max Planck entities. Especially with a view to internationalisation, it is a further advantage to have institutes whose financing costs remain manageable, unlike the overseas campuses of the big American research universities. This helped us to successfully negotiate our new institutes in Luxembourg and the USA.

What's more: we are part of the wider intellectual framework with universities or other research institutions at the locations we occupy. We make joint use of the infrastructure and often help to build profile, as in the case of astronomy in Munich and research into ageing in Cologne. The locations in the Excellence Initiative have benefited from being regionally embedded in this way: we are involved in three-quarters of all Clusters of Excellence and more than half of graduate schools. And the locations benefit in more respects than just science: from way back in the 1980s, the Max Planck Institute of Biochemistry in Martinsried was a nucleus of the prospering biotech location of Munich. The Greater Munich area is home to almost 130 life science companies today.[1]

Ladies and gentlemen, as you all know, any location that looks to provide innovative solutions and products needs outstandingly highly skilled people and, above all, the kind of exceptional talent that yields real breakthroughs. And with ever more nations focusing on research, competition for this relatively small group of individuals is becoming ever fiercer. Who would have thought, a few short years ago, that Max Planck Directors would be on the receiving end of lucrative offers from South Korea?

The video might have given you an impression of how we are able to get exceptionally talented people from all over the world to join our institutes. In the past twelve years, 42 percent of the new appointments held a foreign passport. It's a similar picture in the Max Planck Research Groups. We set up almost 200 Groups and were able to acquire scientists from Harvard, Princeton, MIT and other top addresses to lead these groups. That's because they know that they will find independence, top equipment and an inspiring intellectual and international environment with us. The very name Max Planck is also an attractive proposition as a result.

And we are bringing the very young, skilled people to Germany too: almost ninety percent of our post docs come from abroad. The 63 International Max Planck Research Schools, where we teach graduates in conjunction with universities, are a magnet on this front. Half of our more than 5,000 doctoral students come to our institutes from abroad. But what is it going to be like in

[1] http://www.m4.de/der-cluster/standort/aktuelle-zahlen.html

the future when the influence of demographic change makes the competition for young talent, especially in Europe and the USA, even tougher still?

A young bachelor's student in Singapore or a university graduate from China does not know any of the small research institutes like Salk, SCRIPPS or even Max Planck. This is what I was told quite candidly ten years ago by the young women and men I met at places like the Indian Institutes of Technology in Delhi. Graduates focus on the big names, like Stanford and Rockefeller, Oxford and Cambridge. And in India, the best students go straight there after their bachelor's degree. Since then, incidentally, we have been accepting students at our Research Schools straight after their bachelor's degree!

The big American research universities, above all, are the ones that set the benchmarks and are active the world over in an effort to attract the best young talent. And the popular ranking systems like Shanghai add extra shine to their reputation. But even countries like China are positioning their universities very specifically. The President of the Chinese Academy, with whom we celebrated our 40th anniversary four weeks ago, proudly told me that, whereas ten years ago there had been just one Chinese university among the top 200 universities in the Shanghai Ranking, there were now seven featured in the latest ranking - a development which should come as no surprise to anyone who regularly travels to China.

Our universities have lost ground by comparison: in 2004 we had 17 among the top 200; now there are three fewer[2] – not because they are any worse, but simply because the competition has caught up. And this comes in the wake of a phase of genuinely strong investment by German policymakers under the Excellence Initiative. I wouldn't even like to consider where we would end up if the pace were to slacken. I strongly hope that the German federal states will now use the leeway they have been given by the federal government taking on the *BAföG* higher education grant payments to fund their universities wisely. And, moreover, that the federal and state governments continue investing in the development of top universities.

The problem is even more acute for Southern and Eastern Europe in particular. The science-led European Research Council funds elite scientists in Europe, but what we need to an equal extent are the structures for elite research. When you realise that Israel and Switzerland have more ERC award winners than Southern and Eastern Europe put together, it becomes clear that we have more to worry about than just the ERC. Which is why I have been campaigning for institutions that are strong on research, and happen to be mostly located in Western Europe, to work together with partners in Southern and Eastern Europe to develop effective structures.

Ladies and gentlemen, science is international and it calls for international networks. Our Max Planck scientists are working in more than 4,000 cooperative ventures in 120 countries. 65 percent of our publications are written in conjunction with a co-author outside of Germany.

In 2004 our publications finally began being incorporated in the Essential Science Indicators for the institution as a whole, and not just for the individual institutes. Since then we have ranked visibly on a par with Cambridge, Oxford and Harvard. What is more, the Max Planck Society was crowned the most successful research organisation in the Times Higher Education Supplement Ranking of 2006. Incidentally, if we were counted as a grad school we would be fifth in the Shanghai Ranking – but then we would need to have the right to confer doctorates.

This brings me to the second course I set: positioning the Max Planck Society actively in the international competitive arena.

In recent years we have embarked upon initiatives to raise the awareness of our name and brand internationally. A name that stands for the highest quality of research, the best possible conditions and wide-ranging freedom.

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[2] http://www.shanghairanking.com/ARWU2013.html

Our initiatives include having representations in India and South America, as well as funding our overseas alumni in the form of partner groups in their home nations, or simply providing travel grants for junior scientists from other countries. These encompass marketing instruments such as the Science Tunnel or Images of Science exhibitions. And in view of the fact that young people can only be reached by digital means these days, there is naturally also an English website, our Max Planck Research magazine online and our social media presence on Facebook and Twitter, where 70 and 80 percent of our friends and followers, respectively, come from a country other than Germany.

We are positioning ourselves as a brand not just because the young talent from around the world have their eye on university rankings like Shanghai. We need to have a presence in emerging and established global centres of research alike if we are to broaden our scientific basis, something which I think the video made quite clear.

In the meantime, we have five institutes overseas. We often start though with Max Planck Research Groups. We take great care when it comes to the selection and quality aspects, thereby exporting the Max Planck principle. Building on our scientists' intensive cooperations, we established two Partner Institutes in Shanghai and Buenos Aires. They served as models for the Max Planck Centers. We've since launched 14 Centers. Funded jointly with a scientific organisation in the other country, the Centers pool expertise and infrastructures. Together, we are developing new research fields and stimulating our internal process of renewal within Max Planck. And the Centers have a positive impact on Germany as a location for science: the Center we run with the University of British Columbia has itself led to a tenfold rise in the number of Canadian students at the participating Max Planck institutes. And at the IIT in Delhi, most of the freshmen know us thanks to our joint Center!

Naturally, I am delighted to see the impact that the Max Planck Society is having with these Centers overseas. At the inauguration of the Center at University College London, David Willetts, Britain's Minister for Universities and Science, said he was pleased that the UK was now no longer a "Max Planck-free zone". He went on to say that the country needed structures like those of the Max Planck Society. Ladies and gentlemen, we are talking about the homeland of Oxford and Cambridge universities here! And then two Nobel Prize laureates, Eric Kandel and Richard Axel, wrote to ask whether it wouldn't be possible to establish one of our Centers at Columbia University.

I am grateful to the German government for supporting our activities. I thank the Federal Research Minister and my thanks also go to Foreign Minister Steinmeier and the German ambassadors! I also thank the host nations and those, including South Korea, Mexico and Colombia, which are establishing the Max Planck principle in their own countries, out of their own budgets.

Ladies and gentlemen, this brings me to the third course I set: transferring ideas from basic research to application.

For twelve years I toured Germany and the world giving speeches on how valuable basic research is for the economy. And with good reason: my aim was to create an awareness of the fact among the public at large and especially among policymakers and business leaders. The problem is that the importance of new knowledge is often not apparent to the layperson; its value is hard to measure. But thanks to scientific studies we now know for certain that science is the vital ingredient in technological progress, innovation and therefore wealth. And it's precisely the kind of cutting-edge findings that emerge from basic research that foster the development of new technologies.

In an ideal world, basic research, applied research and commercial businesses all work together on a regional basis. In the direct vicinity of the University of Cambridge, for example, a science-based business incubator has formed. That may not sound like anything spectacular at first – but its impact certainly is: the tiny region is now the destination for eight percent of Europe's

entire risk capital spent on new enterprises![3] A number of multinational corporations have set up their commercial laboratories around the university so that their R&D people can communicate face to face with those in academic basic research.[4]

Such locally-embedded, yet internationally-oriented locations for cutting-edge research and innovation are key. It is they, after all, that are in direct competition. They include regions like London and Boston. But Shanghai and Bangalore are also among them these days. As you can see, even countries that do not count among the technology leaders are giving birth to such locations and putting established ones like Munich under pressure.

For us in Europe, and particularly in Germany, what that means is that we need to do more than just foster excellent basic research. We actually need to get the results of this research out into the world. And that is not as easy as you'd think!

A lot of new scientific knowledge is not ready for application; its further development is fraught with risk and insecurity. In many cases, neither companies nor risk capital investors are prepared to fund the first steps in such development. Nor is basic research itself in a position to drive the further development. In medical research in particular, it would be simply impossible for us to fund the long chain of activities leading from a potential active agent to a licensed drug.

So what course have we set? With the help of Max Planck Innovation, we have come up with concepts that can build bridges to practical application – irrespective of whether the insight comes originally from universities or non-university research institutions. The Lead Discovery Center in Dortmund and the Life Science Incubator in Bonn, for instance, are two places where findings from the field of life sciences are taken and brought up to a stage where they can find easier access to the world of medical practice. And the concept is bearing fruit: we have been able to licence an active ingredient to Bayer, which is now being tested in clinical phase I on patients with advanced cancer.

I have also, however, actively sought dialogue with industry representatives in recent years – and encountered a great deal of openness in the process. Or, as Martin Winterkorn, Max Planck Senator and Chairman of VW Group, put it so succinctly: "Now we can even talk with the Max Planck Society." For me, this was the crucial first step, because where there's no communication, no shared plans can come to fruition.

In order for our country – which has nothing to offer on the world market but innovation – to remain competitive, we need science, business and society to act in harmony.

It's not enough, by the way, to think only of the commercialisation of research findings. How can we put a value on the Max Planck Institute for Criminal Law advising the Philippines on penal reform or, equally, on it working with the Max Planck Institute in Heidelberg to help Afghanistan develop a justice system? Science offers more than the foundation for innovation. It develops solutions to global challenges, be they in the field of conflict resolution or energy supply, nutrition or health. I believe I have been able to get this message across in many ways as President of the Max Planck Society.

And that brings my messages as Max Planck President to an end, once and for all!

I trust that my voyage Back to the Future has not only shown you the compelling courses that have been set. I hope that you, like me, are delighted to have a Max Planck Society that, first,

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3 Salje, Ekhard K.H. "The race to the top: some insular comments on science policy". In Wettlauf ums Wissen: Außenwirtschaftspolitik im Zeitalter der Wissensrevolution, published by Georg Schütte, 59-66. Berlin: Berlin University Press, 2008. P. 59

4 Arthur, Michael and Wendy Piatt. "The economic impact of research conducted in Russell Group universities", 2010. P. 12

stays true to its mission by delivering cutting-edge performance at the frontiers of knowledge; second, brings the brightest minds into the country; third, is a positive messenger for Germany as a location for science; and fourth, is a partner for universities, research institutions and companies, too, because it offers the scientific accomplishments, the creativity and the dynamic renewal to provide the inspiration for success in international competition.

Most of all, I hope that you see in the Max Planck Society something exceptionally precious. Precious for and within Germany! Thank you!