# Speech

by the President of the DFG

Professor Matthias Kleiner

## at the DFG's New Year's reception in Berlin

9 February 2009

*As delivered*

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Your honours, Minister Stratmann, Senator Zöllner, Secretary of State Quennet-Thielen, secretaries of state,
Distinguished Members of the German federal and state parliaments,
Your Excellencies, distinguished Presidents, Magnificencies,
Ladies and gentlemen,
Distinguished colleagues
and friends of the DFG,

It is my pleasure to welcome you to the Deutsche Forschungsgemeinschaft's 2009 New Year's reception this evening.

Distinguished guests, ladies and gentlemen – a warm welcome to all of you! It is good to see so many colleagues and friends from abroad. It is obvious once more – science is an international endeavour.

I would also like to wish you and your families a Happy New Year and all the best, well-being, success and happiness, both privately and professionally, for 2009 on behalf of the Executive Committee and the DFG's head office.

And since this welcome if from the heart, I believe this welcome is most appropriate for early February!

I am very pleased to once again see so many of you here in the Leibniz Room at the Berlin-Brandenburg Academy of Sciences and Humanities this evening, where it has, after all, become an established tradition for the German scientific community to celebrate its first meeting of the year.

While enjoying Champagne and Perrier and some light refreshments, we would like to take a retrospective look at the year that lies behind us and to join you in forging the plans for the year ahead and I look forward to us all enjoying a pleasant evening of animated discussion.

The musical accompaniment this evening is once again brought to us by a very special jazz trio that we are already familiar with:

- **Daniel Goldkuhle** from Cologne on the jazz guitar,
- **Marcel Kroemker** from Berlin on the double bass, and
- **Felix Schlarmann** from Amsterdam on the drums.

I think we can already look forward to this "*Drive"* – so to speak!

Indeed, looking forward to things is the buzzword of the evening.

Every New Year is accompanied by an air of new promise, because who doesn't allow themselves to be completely engulfed by that motivating feeling that the New Year will also be an opportunity to make a new start in a myriad of ways at work and to hope that this confidence will last as long as possible.

Being confident and seeing perspectives for the future is not easy nowadays. For months we haven't seen a day go by when we haven't heard news about the financial crisis and its effects. It is even putting the environmental disaster in the shade, even though it will be yet more serious in the long term – partly and especially due to the financial crisis and the efforts to overcome it.

Looking at these two issues, the environmental disaster and the financial crisis, from the point of view of research funding, I, for one, can see at least one difference:

Climate change is the subject of intense study, there are extensive and solid findings and forecasts, which allow the worlds of science and politics to make concrete recommendations on what action needs to be taken.

The situation with the financial crisis is entirely different. Here there is a lack of clear guidance from the scientific community, of predictions and warnings of the crisis, analyses and recommendations on how to respond to overcome the disaster and the right conditions for creating a forward-looking, more resilient market economy.

Instead, the irrationality of the financial markets that is perfectly evident to us all now is pointed out almost speechlessly, but before the speculation bubble burst there were few who were clear-headed enough to see the crisis coming or warned of the tremendously unrealistic overvaluing that was taking place.

However, the fact that phenomena of irrational human judgement and behaviour are by no means unstudied or inexplicable is shown by DFG-funded research, including that of the social psychologist **Fritz Strack** from Würzburg, which I can warmly recommend to you as an interesting read, as well as the work of **Klaus Fiedler** from Heidelberg, which I will say more about later.

Ladies and Gentlemen, the media occasionally accuse us of working diligently on a picture of stagnation and demise, more or less deriving particular delight from crisis and doom and gloom scenarios.

I certainly cannot confirm that this holds true for the DFG. On the contrary! We have a great confidence and perspectives for the future.

Although we, the DFG – as a self-governing body of the scientific community and a community of researchers – do indeed see many questions raised by this crisis, we also see the many opportunities that are opened up by research funding.

The financial crisis acts as a lens, helping to set clear priorities. “Crisis” – a word that comes from the Greek word “krisis”, which basically means *"a decisive moment"* or *“turning point"*.

In politics we are also going through times of setting clear priorities.

As Chancellor **Angela Merkel** emphasised in her New Year’s speech, in which she said that *“we will invest more in schools, colleges and universities. That’s politics for the next generation.”*

I can still well remember the 25 November, 2008, when the news was full of horror stories about the stock market.

However, it was on this very day that the German Federal Parliament made a groundbreaking announcement, as it passed the 2009 budget for the Federal Ministry of Education and Research amounting to a sum total of 10.2 billion euros, representing an increase of over 9 percent.

In addition to this, the Federal Budget Committee, headed by Minister **Annette Schavan**, made an additional 200 million euros available, which is to be used to invest in research into climate change, energy efficiency and other global issues affecting our future.

Investments in research are very good investments and are, without a doubt, the most lasting economic stimulus package imaginable.

In order to be in a position to retain or take an international lead in politics and business on the topics of the future such as energy provision and $CO_2$ reduction, biomedicine, demographic change, city and regional planning, biodiversity, production control systems, electric mobility and nanotechnology, we need to forge ahead in science and research.

That is why it is so important to invest in research funding. And that is a field that we have been successful in for the past 60 years. The DFG is – as I would like to point in spite of all humility – one of the international leaders in research funding.

Just to take one example, almost every German Nobel Prize winner in the past few decades has been funded by the DFG.

We were therefore very pleased to see four German Nobel Prize winners in the past four years, which were awarded to **Theodor Hänsch, Peter Grünberg, Gerhard Ertl** and, most recently, **Harald zur Hausen**.

So you see, ladies and gentlemen, you won't get toxic shares from the DFG, we don't need a "bad bank".

Knowledge and insight are a stable currency.

We have a productive research landscape to thanks for this, although it still needs additional impetus in order to retain its place as one of the leaders against the international competition.

This depends on politics, which creates a generous framework, in which this research landscape is secure and is able to continue developing.

And German politics has already set out in a very promising direction:

The three pacts – as I would like to refer to the great drivers of change, the Excellence Initiative, the Higher Education Pact for Research and Innovation, and the Higher Education Pact 2020 – constitute a very robust framework for strengthening Germany's position as a centre of science and research.

What will be crucial to success now is the long-term continuity of these "three pacts" in precisely this triad, as a chord in three parts, because reliability stamina and sustainability are the decisive factors, even just to recruit and retain the best talent in science.

We are succeeding in this, for example with the Excellence Initiative.

It has ushered in an entirely new dynamism, a degree of vertical differentiation that was lacking in the past, and a remarkable spirit of optimism at German universities and in the German scientific community as a whole, which is developing a new identity.

Many universities, even those which have not received addition funding, have perceived the Excellence Initiative as an opportunity to review their entire organisational concept, streamlining their management structures, sharpening their profiles and intensifying cooperation with other universities, research institutions and business. The international profile of German science has risen significantly.

The Excellence Initiative has enriched the German scientific landscape with some 39 graduate schools, 37 clusters of excellence and nine institutional strategies to promote top-level research. These have created jobs in research and teaching for an additional 4000 scientists and academics, who need the funding provided – and who do indeed use it.

Due to the great range and amount of research done by these 4000 scientists and researchers, the Excellence Initiative will have a considerable impact on the development of the German economy and society and thus constitutes a long-term economic stimulus package, if only for this reason alone.

This also applies, by the way, for the overhead funding provided by the DFG, which adds an additional 20 percent to all project funding, which was so long awaited and was finally introduced thanks to the Excellence Initiative and which is also foreseen for the DFG's other funding programmes in the Higher Education Pact 2020.

The effect of long-term funding by the DFG funding on economic strength is apparent from an example:

The DFG Collaborative Research Centre on nanotechnology based in Duisburg and led by **Paul Roth** derived the fundamental principles of ceramic separators, a key element of new lithium ion batteries used in electric vehicles, a few years ago.

It was also with DFG funding that these findings were developed and turned into an application in a joint venture between seven universities and the company Evonik Industries.

“Application” now means the company “Li-Tec” in town of Kamenz in Saxony, a joint venture between Evonik and Daimler, which it is predicted will create some 1000 jobs in the medium term.

This is a very pleasing success story for the DFG, and at the same time an incentive to intensify our efforts to promote knowledge transfer. In order to do so, we need basic researchers to enter into partnerships with business and society.

We therefore warmly welcome the appeal by the Donors' Association for the Promotion of Science and Humanities in Germany, announced in Berlin, which calls upon its members to acknowledge and declare their responsibility – even in this difficult economic period – for a powerful education and science system in Germany and to continue their significant financial commitment to it.

Ladies and gentlemen, if we ask outstanding personalities in research the question: What conditions do you need to do your research?

the answers all follow the same general pattern at present: The most common answer is that they need freedom and long-term perspectives. We need freedom from superfluous bureaucracy, from excessively frequent reports, freedom from financial concerns, freedom for international cooperation as well as good education for the next generation of young researchers.

As **Lao Tse** put it, “To lead people, walk behind them.”

In saying that, the philosopher did not, presumably, mean more stringent control from behind. Rather, he has realised that you need to give people the necessary freedom to allow them to go forwards. And you need to allow them to look far into the future in order to give them long-term perspectives.

“To make progress with long-term perspectives” is what both those universities that have already been successful in attracting Excellence Initiative funding as well as those that are now ready for the next round of the initiative.

The continuation of the “three pacts”, and thus of the Excellence Initiative too, was already agreed upon by the heads of the federal and state governments in Dresden in October 2008, a fact for which we are truly grateful.

Now it is time to address the actual form this will take.

This needs to involve the Excellence Initiative giving a fair chance to both new and renewal proposals. For this reason, the DFG and the German Science Council have recommended a 30 percent increase in funding for the continuation of the initiative.

The other two pacts also need more financial backing, and we earnestly hope that the federal and state politicians will join in taking a long-term approach when it comes to approving funding for the “three pacts” as a whole, because on no account may we allow it to be science and research that falters in the period following the economic stimulus packages, when the politicians metaphorically “wake up with that morning after feeling” when they begin to regret the debt that is being built up. After all, who wants to cancel the future?

Ladies and gentlemen, in order to make progress, science and research need to take stock of itself and allow itself to be reassessed time and time again.

Taking stock of oneself, that means comparing one’s own results, efforts and experiences – with those of one’s peers at neighbouring universities as well as throughout Europe and internationally.

In the interaction of competition and cooperation, Europe presents us with the unique opportunity to reach a critical mass where it has not yet been reached, in the provision of major instrumentation or in the exchange of the best minds, for example.

This not only requires confidence in productive cooperation amongst a variety of partners, but also carefully considered targets. The DFG set out just such targets in its European paper, published last year.

In the years ahead, the DFG will play an active part in shaping the European Research Area, or ERA, pursuing the following six main priorities:

**Firstly:** Increasing bilateral or multilateral funding activities.

**Secondly:** Recruiting and retaining the best minds in the world.

**Thirdly:** Boosting the role played by the European Science Foundation, or ESF, as one of its member organisations.

**Fourthly:** Representing the interests of German university research in the EU.

**Fifthly:** Participating in the creation of EU basic research programmes.

**Sixthly:** exploiting the competitive boost given by the European Research Council, or ERC.

The first point, bilateral and multilateral cooperation, is particularly close to our hearts.

Although the ERC, funded by the European Commission under the Seventh EU Framework Programme for Research and Technological Development, and the ESF as a self-governing body of the European scientific community help to increase the diversity of funding programmes considerably, and EUROHORCs, an informal association of the heads of more than 40 European research funding organisations, have proven themselves as masterminds and mentor, what is the basis for European cooperation in research funding? Where does it stem from?

Of course, initially it stems from an interest in cooperation between researchers and scientists, which is then supported by bilateral or multilateral funding by national organisations, and sometimes even stimulated by them. Through ongoing collaboration over the years the organisations get to know and trust each other better and better.

This was how the remarkable Lead Agency process came into being, for instance. Last May we signed an agreement that was the very first of its kind with our partners the FWF, in Austria, and the SNF, in Switzerland. In the Lead Agency process, only one organisation reviews the cooperation proposals and the other partners recognise the outcome of the review.

It is actually a simple concept, but by no means simple to put into practice. But it seems to be contagious, as more and more partners have since expressed their interest in becoming signatories to the agreement.

This is a good, basis of trust for the common European research area of the future, for a European Grant Union.

Often it is direct, personal contact that has the greatest effect and that builds the most trust.

This was why we held an International Information Week for our numerous partner organisations around the world – of which there may be as many as about a hundred – at our head office in Bonn last year, which was very successful.

It is also important, however, for the DFG to be represented beyond the bounds of Europe, with staff on the ground in various priority countries, for example, in New York, Washington, Moscow, Beijing, Delhi and Hanoi, because science is becoming increasingly international and the DFG needs to take the lead as the avant-garde, so to speak.

I am therefore very pleased that we will be opening a new DFG Liaison Office in Tokyo on 15 April this year.

I am also very pleased that the Sino-German Transregional Collaborative Research Centre was approved in March 2008, following a joint review in Beijing – another success story that can be put down to our presence on the ground.

With its Sino-German Year of Science the BMBF is also emphasising the importance of partnerships in scientific cooperation with China.

We see the establishment of so called “German houses of science and innovation” as being equally important. The DFG supports this concept put forward by the German Foreign Office and the BMBF. We are already cooperating with various partner organisations in the USA and India under a single roof, for example.

This is one reason why we will also participate in establishing German Houses there, and will probably act as a consortium co-ordinator in New Delhi.

Ladies and gentlemen, let’s return to Germany.

The DFG is in a constant process of developing its funding activities according to the maxim of: *“More opportunities, freedom and time for research – less barriers and bureaucracy.”*

One of our objectives is, for example, equal opportunities for women in research. This was why we suggested to our members last year – with success – that they should commit themselves to “research-led equal opportunities standards”.

This is aimed at ensuring equal opportunities for young and old, for greater flexibility and more trust, in order to ensure personally suitable and appropriate funding in every subject area, based purely on quality and originality.

In my first New Year’s speech, in 2007, I spoke of the concept of a new type of project, of “promoting achievement”. I spoke of top-class scientists and researchers with outstanding, especially high-risk ideas, of a vote of confidence and of large amounts of funding with greater freedoms, and last year we launched this special funding instrument and have been receiving proposals for it since June. So far decisions have been made on some 62 such proposals. In December the DFG’s Joint Committee approved the first six **Reinhart Koselleck** Projects and last Thursday two more followed.

For the approval of a Reinhart Koselleck Project, at least three things are required: An unusual and novel idea, an especially high level of risk and an exceptional scientific personality.

A short proposal, about five pages in length, is all that is required to outline the project and, if successful, the result is a grant totalling up to 1.5 million euros to be used flexibly over a five-year period.

This all demands great courage, both from the applicants who submit proposals as well as from the reviewers, the review boards and from the DFG's Joint Committee as the decision-making body.

And we very much hope that this courage radiates, and that it rewards us, especially by giving us greater courage to pursue high-risk research beyond the mainstream that is funded in the DFG's other "normal" funding programmes.

This project is named after **Reinhart Koselleck**, a historian who died in 2006, who is considered one of the founders of modern social history. One of his outstanding abilities was his capacity to always look beyond the bounds of his own subject area, to think laterally. This is, in my opinion, an incentive and an obligation for anyone who wants to conduct such a project.

The first researchers who were granted approvals for Koselleck projects are from a wide variety of disciplines and cover a broad age range.

What they all have in common, however, is a good portion of self confidence in their ability as researchers. They are aware of their potential and have confidence in their ideas, energy and dedication – and that at the highest scientific level.

The first eight projects, which I would like to present briefly to you now, cover a very broad spectrum, from zoology, mechanochemistry, and nuclear physics to medical research, material sciences, microsystem technology and psychology.

Allow me to begin with a project in zoology: The archerfish shoots down insects resting on foliage or mangrove roots above the water using a jet of water. How do these fish calculate so quickly exactly where their prey will land and get to exactly the right spot before their competitors can snatch the tasty morsel away from them? Or, to put the same question in a more abstract way: How can a network of just a few cells control complex decisions?

**Stefan Schuster,** a private lecturer (Privatdozent) at the University of Erlangen-Nuremberg and a DFG Heisenberg Fellow, aims to answer these questions. He will do so using a broad spectrum of state-of-the-art methods borrowed from behavioural and electrophysiology, functional imaging, modelling and from genetics.

Moving on from zoology to medicine, Basic research can produce findings that, if transformed into applications, can save lives. Studies in cancer research, for example.

This includes prostate carcinoma, the most common tumour in men and the second most common cause of cancer-related deaths.

**Roland Schüle**, a professor of molecular medicine at the University Hospital Freiburg, has put his money on studying molecular mechanisms in the pathogenesis of this cancer, since they may be the key to developing novel therapeutic approaches.

The alchemists in the 15th and 16th centuries dreamed of finding a way to make gold in their laboratories. Admittedly, they didn't succeed, but they did discover porcelain and phosphorous.

Their experimental skills also gave rise to some of the laboratory methods that are still in use today, for instance the use of a pestle and mortar to homogenise powders, where mechanical force can, under certain circumstances, trigger chemical reactions.

**Dominik Marx,** a professor of theoretical chemistry at the Ruhr University in Bochum, is dedicated to the analysis of such reactions, and in particular the effect of mechanical forces on electron pair bonds within molecules.

The unique thing about mechanochemistry is that neither high temperatures nor high pressures are required, meaning that it has a very wide variety of uses, ranging from alternative forms of energy storage to medical research and to waste management.

Ladies and gentlemen, let us now move on from powder to metal – for example, to steel that can vary very widely, from ugly dents in your car door to the delicate sound produced by piano strings that are ten times as strong.

And the properties of metals can be even more varied if you look at their structure at the atomic scale.

**Reiner Kirchheim**, a professor of material sciences at the University of Göttingen, is studying the question of how it may be possible to create novel nanostructures of materials that open the way to a wide variety of new applications. The objective then would be to manufacture nanoporous metals to serve as an innovative form of hydrogen storage, for example.

Reiner Kirchheim, born in 1943, is still active far beyond the normal retirement age, as part of the “Die Niedersachsenprofessur – Forschung 65 plus” (The Lower Saxon Professorship – Research 65 plus) programme, showing us how it is possible to start new ventures even at such an advanced age.

Man, so the psychologists tell us, is very adaptable, mentally as well as physically, in particular due to the ability to make both implicit and explicit predictions about the future. What is the nature of the cognitive processes and structures required to make such predictions?

**Erich Schröger**, a professor of psychology at the University of Leipzig, aims to answer this question and to extend and merge two traditionally separate fields of research: *“automatic modelling and the systematic acquisition of auditory rules”* and the *“suppression of the brain’s responses”* to autogenous auditory stimuli.

Erich Schröger hopes to prove experimentally that the prediction and verification of what was predicted play a key role in both of these areas and that they are based on similar cognitive processes.

The ability to make predictions about the future is one thing, but what are the consequences of that ability?

*“Think first, then act”*, is a phrase that is heard often, especially by young people. That is an instruction that is intended to lead to a rational decision being made, but which situations are rational decisions actually successful in? And what is “rational” anyway?

**Klaus Fiedler,** a professor of social psychology at the University of Heidelberg, is interested in how our decisions change according to the context in which we find ourselves. More precise insight into how we handle decisions is of interest in many areas including health, the environment and finance.

Klaus Fiedler has a clear goal: He aims to take a cognitive-ecological approach to developing decision making research that includes the ecological limits of rational decision making.

Nanotechnology has become something of a buzzword. Everybody knows that it has something to do with minute structures, but a select few realise the enormous challenges that need to be overcome in order to make truly stable structures of such miniscule size and with clearly defined properties and functions.

**Margit Zacharias**, a professor of nanotechnology at the University of Freiburg, aims to develop entirely new methods of doping nanostructures and, in particular, nanowires.

This is because, to date the there is no consistent way of defining the electronic properties of nanostructures so precisely that they can be used for nanoelectronics – an extremely complex problem that is crucial to exploiting the immense potential of new applications.

Ladies and gentlemen, the last project that I would like to present to you this evening will also study structures that are invisible to the human eye.

**Reinhard Dörner**, a professor of atomic physics from Frankfurt, has already lectured to his students “on dancing electrons and shivering nuclei”.

The phenomena behind this are complex. Take the structure of the helium atom, for instance, which consists of just two electrons and an atomic nucleus. However, if you combine two or three helium atoms to form little molecules, you obtain systems with sensational quantum properties that are still not fully explained, which Reinhard Dörner is studying experimentally.

To do so, this particularly ambitious project will involve bombarding helium molecules with various sources of radiation and using a reaction microscope, the development of which Reinhard Dörner played a critical role in, to measure the directions and speeds at which the fragments move as they break up.

This will ultimately make it possible to reconstruct the spatial structure of the molecules and their bonding structure.

As this brief presentation of the Reinhart Koselleck Projects approved to date shows, this funding instrument stands primarily for the courage to conduct high-risk research and for confidence in ideas and the creativity of science.

Dear professor Zacharias, dear colleagues, I wish you all the very best for your Reinhart Koselleck projects. The DFG will, true to the spirit of Lao Tse, be right behind and beside you and will be following your work with great excitement, but without disturbing you, of course.

Ladies and gentlemen, I wish you all enough courage and opportunity to realise your ideas, be they in politics or in science, and I of course hope that the politicians' ideas will be to our benefit ... and perhaps you too will then go on a "research expedition to Germany" this year, where we might meet again.

This almost brings me to a conclusion, but before I close, allow me to take a moment, at the beginning of the New Year, to thank everyone who contributed to the DFG's success over the past year.

First and foremost I wish to thank our financial sponsors, especially in the federal government and also in the state governments, both for your financial support as well as your heart-felt interest in what we do.

I would also like to thank our private donors, represented by the Donors´ Association for the Promotion of Science and Humanities in Germany.

Next, I would like to thank all those who contribute to making the DFG what it is, a self-governing body of the scientific community.

This includes the member institutions and their administrations, which don't always have it easy with our recommendations – thinking in particular of the "research-led equal opportunities standards".

And then there are the great many scientists and academics who voluntarily give of their precious time with great dedication, be it in the DFG's statutory bodies – the Senate, the Joint Committee, the Grants Committees or the Senate Commissions as well as, most importantly, in the review boards.

This includes the two lots of ten thousand annually. Many thanks on the one hand to all of the reviewers who untiringly and with great dedication give of their time and expertise in the service of a self-governing body of the scientific community.

Many thanks, on the other hand, to the applicants who submit their funding proposals to us, because at the end of the day we are only as good as they are.

I would also like to especially thank all of the allied organisations, who are such reliable partners.

Furthermore, I wish to express my warm gratitude to the DFG's head office – led by our Secretary General, Ms. **Dorothee Dzwonnek**, as well as the Heads of Department, **Beate Konze-Thomas**, **Harald von Kalm** and **Robert Paul Königs** – as well as all of our staff at head office. What would the DFG be without their wisdom and their passionate dedication?

I would also like to thank **Marina Koch-Krumrei** and the rest of staff here at our Berlin office, for their contribution towards making this enjoyable evening such a success.

Finally, I would like to thank you all, my distinguished guests, for taking the time this evening to join us and your patience in listening, and I hope that you will enjoy the rest of the evening and stay a while to enjoy pleasant and interesting conversations.

I wish you a successful year 2009 – with many courageous ideas, opportunities taken, plans realised and good decisions made! Thank you!