

The Deutsche Forschungsgemeinschaft at the European Parliament

28 February, 2005

The significance of basic research

Basic research, ladies and gentlemen, is a key issue in our life. We depend on it for economic growth and public welfare, for health care and the solution of environmental problems. Two recent examples may illustrate this:

- When South-East Asia was hit by the SARS epidemic two years ago – represented here by the structure of the virus - it was the concerted effort of research groups around the world that led to the rapid identification of the virus and its spreading mechanism. Such effort is a precondition for the speedy development of a vaccine.
- Another example are the devastating tsunamis that took hundreds of thousands of lives last Christmas in Indonesia and other countries – depicted here by the authentic seismogram. Geological research centers around the world are currently developing more effective techniques to predict seaquakes and help prevent such disastrous effects in the future.

Basic research is, on the one hand, the exploration of the unknown, the acquisition of knowledge. But it also holds the potential for application in industry and society. Basic research is, in fact, at the heart of innovation.

Therefore it is vital, ladies and gentlemen, that we create conditions which make basic research possible. Above all, this depends on people: we have to identify the most talented researchers and take care that they find both an appropriate research environment and the freedom to do their work independent from non-scientific demands. And last but not least, successful research needs adequate funding.

Research needs funding

In Germany, two thirds of the total expenditure on research comes from industry which provides funding for research out of its profit margin. But basic research, which by nature cannot guarantee an immediate return, is the responsibility of the public sector. The question is, then: how can researchers and projects be funded in the most effective way? The instrument to promote the best research and the most qualified and promising scientists is what we call a "research council" – a funding agency that gives financial support to people and projects on the basis of competition and scientific excellence. We find examples of research councils in all European countries.

The DFG

The German Research Foundation DFG, the Deutsche Forschungsgemeinschaft, is the largest research council of this type in Europe and one of the major funding agencies for basic research in the world. I would like to take the next few minutes to introduce you to the DFG and give you some basic information about who we are and what we do.

One of the main characteristics of the DFG is that it provides funding for all areas of research: The Humanities and social sciences, biology and medicine, natural sciences and engineering – everything from African Studies to Zoology. The diagram illustrates how funding is distributed among the various disciplines.

As I mentioned earlier, the DFG is responsible for funding research in universities, and in addition, for networking university research with basic research in other research institutions. In 2004, the DFG's budget amounted to 1,31 billion euros. The money is provided by the federal government and the 16 regional states, which in Germany are the owners of the universities.

The DFG's mission

So how do we go about funding research? What are the main elements of our mission? As a research council the DFG is fundamentally committed to

- serving science in all its branches
- promoting young researchers and
- supporting international cooperation

However, our mission goes beyond that. Since – for historical reasons – Germany does not have a national academy, the DFG has also been entrusted with advising parliaments and public authorities on scientific issues.

Scientific autonomy is a characterizing feature of this organization. The DFG is an institution of self-governance. It acts at arm's length from the government. But independence not only concerns organisational issues but also the key responsibility of the DFG: the funding of research projects. Our budget is distributed with the help of a portfolio of funding instruments, ranging from small individual grants to large research centers. The close to 20 000 applications we receive every year are evaluated in a peer review system that works with almost 600 elected scientists and more than 6 000 international experts. This guarantees that funding for projects is provided in a transparent and competitive fashion and solely on the basis of scientific excellence.

Exhibitions in the European Parliament

When you look around this room, ladies and gentlemen, you will not only notice four replicas of ancient Chinese soldiers, but also a number of other objects. Some years ago the DFG started informing the public about its work with the help of exhibitions. We have brought here today elements of four such exhibitions which have been shown in many countries around the world and which are going to be on display in this room for the entire week. These exhibits originated in DFG-funded research projects and illustrate the diversity of scientific disciplines we support. I am going to introduce each of the

four exhibitions as I proceed. I would also like to point out to you that for each part of the exhibition we have invited a scientist who will be available to answer your questions later on.

Global competition

This leads me directly to the first exhibition. As you know the focus of DFG funding is on basic research. However, this does not mean that we are not concerned with questions of technology transfer. In fact, many projects, particularly large and long-term projects include industrial partners. The first part of our exhibition, *The New Way into Space*, is a good example. For many years, large-scale projects funded by the DFG contributed to the development of a space carrier technology called "scramjet". You may have heard that NASA launched the experimental carrier x-43 that reached up to ten times the speed of sound – and they used this very technology to do it. It is a well-known phenomenon in Europe often called the "European paradox": We are often responsible for the basic scientific invention but then fail to achieve its full economic exploitation. Where Europe is a leader in research it should also be a leader in economic performance. Therefore I wish to give full support to the idea of a "Knowledge for Growth Pact" and the Commissioner's plan to turn Europe into a job machine. Nanotechnology and Material Science are just two examples for research areas in which this pact could take effect.

It is obvious that in order to pursue growth and competitiveness a clear strategy is required. Strategy is crucial to the notion of applied research. But what about strategy in basic research?

Strategic priorities in research funding

On the basis of its statutes the DFG has sharpened its profile in three main strategic areas which govern all its activities as a research council, each one of them being as important as the other:

- DFG is committed to advancing the careers of young researchers
- DFG gives special attention to complex research issues by supporting interdisciplinary research and networking
- And DFG advances the internationalization of research and the cooperation of researchers worldwide

Promoting young researchers

I assume we all agree, ladies and gentlemen, that the future is in the hands of our young people. Their education and training therefore has to be of the highest priority, also in the research system. Schools, universities and science organizations have to cooperate in order to establish high quality research environments and recruit the best talent for the advancement of scientific progress. The DFG promotes young scientists through a number of programs and initiatives. Here I would like to mention our "junior research groups", a programme which was initiated in the late 1990ies and is designed

to promote early scientific independence for the most talented young researchers.

Supporting interdisciplinary research)

Another focus of our efforts is the support of interdisciplinary research. Traditionally, scientific progress has taken place within the boundaries of disciplines and established fields. However, many of the most topical and fascinating developments take place in between and across disciplines.

Interdisciplinary research requires scientists who are capable and willing to cooperate across the borders of their specific expertise in projects of sometimes big dimensions. The second exhibition you can see here, called *The Water of the Desert*, shows results of a long-term cooperative project in Berlin in which 18 scientific disciplines were represented, among them geology, hydrology, cartography and prehistory. Such a project calls for a strong effort in international cooperation and, when it comes to application, requires a transfer of knowledge into the regions concerned.

Advancing international cooperation

Our third strategic priority is international cooperation. It will eventually lead me to talk about Europe. But let me start by saying that even if the money that is distributed by a research council is of national origin – and the DFG's money is indeed more than 99 percent German taxpayer's money – it must enable researchers to work at global scale and in global competition. They need to cooperate and network internationally as much as their interests and subjects require. For the DFG, facilitating cooperation and networking between German researchers and their colleagues abroad is an overriding feature across all our instruments and programmes.

Over the decades the DFG has built up more than 60 partnerships in bilateral cooperation with research organizations all over the world. Recently, the DFG has begun to establish a number of liaison offices at strategically important places outside of Germany. This began with the German science organisations' liaison office here in Brussels, KoWi, and now ranges from offices in Washington and Moscow to the joint center in Beijing with our Chinese partner organization, the National Natural Science Foundation of China (NSFC). The title of our Chinese-German exhibition *Begegnungen* which is also on display here – means "meetings" but also "joint undertakings" and it gives a remarkable example of scientific cooperation in a long historical perspective. The four soldiers from the army of a Chinese Emperor from the 3rd century BC symbolize such Chinese-German cooperation, here between archeology and the preservation of historical monuments. The discovery of these soldiers thirty years ago was an archeological sensation!

„Research Funding in the Heart of Europe“ – this is the title that we have chosen for our entire presentation. The DFG is not the hub of the world but it operates from the heart

of Europe. It is our deep conviction that research is a central issue for Europe, that it is literally *at the heart* of Europe. Europe's future depends fundamentally on its performance and its competitive strength. So, what is the contribution of research councils such as the DFG, and what are our expectations?

The origins of modern Europe

Ladies and gentlemen, let me begin my answer to these questions by introducing our fourth exhibition. *Jadis en Europe- Searching traces between Maas and Rhine* was a long-term project in the humanities located at the University of Trier. The area between Maas and Rhine is - historically as well as geographically – the heart of modern Europe and also the origin of the European Union. The part of the exhibition you see on display here concerns an aspect which is and has always been a dominant factor in culture: money, credit and finance.

The ERC in the European Research Area

Even though money is an important issue, obviously also in research funding, it is not what I want to focus on. Rather, I would like to direct your attention to an important European development. Five years ago the European Commission published its new research policy under the slogan "Towards a European Research Area". This is the widest and most inclusive concept of research in a Europe which is not limited by boundaries and obstacles but open to free movement and cooperation in the most productive way.

Other actions are on the agenda for European Research. However, the most innovative issue in current European research politics is the European Research Council.

Until very recently basic research was not considered to be an element of R&D funding within the EU Framework Programme. Today basic research and the creation of an ERC have become part of the Commission's proposal for the 7th Framework Programme. The European Heads of Research Councils (EUROHORCs) are glad to be partner of the Commission in developing the concept of an ERC.

What, then, should be the main characteristics of an ERC from a scientific point of view?

- a high degree of organizational independence (operating "at arm's length").
- an organization with governing bodies consisting of researchers of the highest reputation.
- A lean administration.
- Representation of all areas of science and research.
- A high-quality peer review system.
- A set of clearly defined instruments, with scientific excellence as the sole criterion and without any regard to "juste retour".

The perspective of an ERC has created a lot of excitement. I have been impressed by the enthusiasm which has built up over the last few years. So, what does science expect from the ERC? Like in sports, in the arts or in any other highly competitive fields researchers have the ambition to go towards and beyond the limit. They want to be on top, to be among the best, to play in the champions league, in order to compete on a global level. If the best researchers are motivated and enthusiastic to contribute to an ambitious goal then the prospects for an ERC are excellent. We hope the DFG and its guiding principles may serve as an example for this new venture.

Ladies and gentlemen, I thank you very much for your attention.