



Providing the Means of Action

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Ladies and Gentlemen,

Dear Colleagues,

Standing united by science for a better tomorrow, I wish to thank you very much for inviting me to shed some light on how science and research funding jointly provide the means for political action. Moreover, I am happy to address the role of science, technology and global research cooperation in solving today's greatest challenges in the age of multiple crises—pandemic, war, and climate change. Against this backdrop, I will focus on questions such as: What does it mean to be united by science? What is the role of research in this process? What is the role of research funding? And, most importantly, why do we need to stay curious to achieve this unity? Let me begin with the latter: after all, every research question, and therefore science as a whole, is initially ignited by curiosity.

1 Fostering Curiosity

Ever since Plato identified curious astonishment as key to human wisdom, curiosity has laid the foundation for all research activity, since it stimulates interest in generating knowledge and advancing innovation. Fostering scientific curiosity is therefore the ultimate goal of our endeavours in promoting free and knowledge-driven research as the backbone of the German science system.

Keynote Speech held at the Curious 2022—Future Insight Conference, 12 July 2022 (The text has been updated and revised in December 2022. The character of a speech was retained for stylistic reasons.).

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On the one hand, basic research contributes indispensably to overcoming the climate crisis, strengthening social resilience, and striving for technological sovereignty, among other things. On the other hand—as we continue to learn in the course of the COVID-19 pandemic and the war of aggression on Ukraine—basic research across its entire breadth helps us prepare for unforeseen challenges. In this sense, such research also lays the foundation for future innovations. This is why continuous investment in free and curiosity-driven research is the core of our research and innovation funding strategy.

The German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) funds more than 30,000 basic research projects every year across the full range of academic disciplines—from archaeology to artificial intelligence, from law to atmospheric research, and many others. Since every funded project reflects an attempt to think in a new way, aiming to achieve innovation and establish unexpected creative interrelationships, the DFG regards itself as a catalyst for scientific ideas. This goal is fostered by our knowledge-driven funding procedures in which decisions are largely based on the originality of the research proposals, and hence derives indirectly from the researchers' own intrinsic curiosity. Each of these projects adds to the potential to change society overnight—frequently within complex societal, biological, or technological contexts and often on a global scale. This is also why proposals to the DFG can be submitted at any time, in any field, on any subject, and on any scale, because we firmly believe that scientific curiosity is the key to keeping up with the ever-changing world in which we live.

2 Knowledge Repositories

Facing up to the demands of the twenty-first century can make us all feel somewhat breathless as we adapt to the incessant stream of events that so rarely gives us a break. After all, the challenges our societies have to face are enormous. Among them, climate change and the consequences of the man-made changes affecting our living environment are issues we are all confronted with. Moreover, we might encounter the emergence, spread, and increasing resistance of pathogens. Finally, our societies often face challenges relating to migration and the scarcity of resources, including their uneven allocation, religious and cultural tensions, political upheaval, and armed conflict—right through to the whole kaleidoscope of political and societal challenges resulting from digitalisation.

These challenges continue to be highly urgent—and we do not yet know which of them will keep us particularly occupied in the near future. Nor do we know which elements of our scientific, technological, and social knowledge repertoire we might need to draw on to provide sustainable responses. But we do know that research can and should empower us to cope not only with today's pressing challenges but also with possible future crises that we are not yet able to anticipate. Only science fuelled by free and knowledge-driven basic research can provide us with knowledge repositories capable of meeting the unknown challenges of the future.

3 Corona Pandemic and mRNA Method

Allow me to highlight one of those repositories as evidence of why investing in basic research—the search for pure knowledge—is so important: the messengerRNA vaccination method, which has its origins in cancer research. This example demonstrates that the later application context of research results is not necessarily foreseeable at the time of funding. The DFG funded fundamental research into mRNA vaccination carried out by BioNTech co-founder Uğur Şahin more than 10 years ago in connection with individual projects and Collaborative Research Centres at the University of Mainz. This shows that excellent research can provide answers to questions that often do not arise until much later.

The messengerRNA vaccination method has significantly advanced our fight against the pandemic. Thanks to the progress made in basic biomedical research, clinical research and transfer to application, and thanks to the ongoing support for these accomplishments among policymakers and society at large, it has now been possible to offer an effective response to the coronavirus pandemic. Unfortunately, we must also accept that the cycles in which epidemics and pandemics can occur are becoming increasingly shorter. Firstly, this is due to the fact that we now perceive outbreaks more quickly and with greater precision than before. And secondly, our globally interconnected ways of life foster both the emergence of pandemics and our susceptibility to them.

It is our innate responsibility both as researchers and as research funders to consistently stay one step ahead of the next pandemic event. It is therefore crucial to reassess the risk factors relating to the emergence of pandemics and to counteract the enormous burden they place on our ecological and cultural systems. This can be called pandemic preparedness, or it can be linked to the notion of resilience, but it can also be defined somewhat more broadly. From my point of view, it is essential to maintain a reservoir of knowledge in the life sciences and natural sciences, as well as in the humanities, social sciences, and engineering sciences, so as to be able to tackle the challenges of the future.

4 Global Challenges and Global Science

Such future—and as yet unknown—challenges will very likely go beyond the perspective and scope of national research and national research funding. Hence, we should not only be thinking in ever new ways, but also engaging in global thinking and collaboration.

Once again, the pandemic has made it painfully clear what needs to be done. Confronted with the virulence of Sars-CoV-2, we have seen how important it is to think globally and take resolute action in order to lay the foundations for effective pandemic prevention and management. We should not remain attached to old boundaries but cast our eyes further afield to new interrelationships—based on an understanding of the real-life conditions of our planet Earth and geared towards its preservation for humans, animals, and plants.

In fact, the pandemic serves as a blueprint for what is yet to come and what remains to be done in both science and research funding. Such exceptional situations require scientific perception, political courage, and orientation towards global cooperation. Global challenges—be they societal, environmental, biomedical, or otherwise—need solutions provided by global science.

In view of this, the DFG has intensified its involvement in the Global Research Council (GRC) and has become even more active in shaping global research cooperation. As a global association of research funding organisations, the GRC takes on the role of a catalyst to enable funding organisations worldwide to share their experience and foster multilateral research and collaboration across continents.

As a shining example of such international scientific cooperation, I would like to draw your attention to our promising collaboration with scientists from Sub-Saharan Africa—namely, with the African Council for Higher Education (CAMES) and the UNESCO unit The World Academy of Sciences for the Advancement of Science in the Developing World (TWAS). For the past 12 years, TWAS and the DFG have jointly supported over 350 early-career investigators in pursuing research in Germany. Over a third of them are actually attending this conference and will be meeting tomorrow to start a TWAS/DFG alumni network. I am confident that this new network will lead to more joint research by Sub-Saharan and German scientists, more joint publications, and more German-African cooperation in Africa.

Also present at this conference is the “Research in Germany” initiative, launched by the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) in 2006—another example of successful collaboration dedicated to meeting global challenges. Under this initiative, several German research and funding organisations such as the DFG, the German Academic Exchange Service (Deutscher Akademischer Austauschdienst, DAAD), the Fraunhofer Society (Fraunhofer-Gesellschaft), and the International Office of the BMBF have joined forces to represent Germany abroad as a country of research and innovation. With this aim, the initiative has helped German researchers initiate and establish contacts worldwide.

5 The War in Ukraine

Sadly, this kind of international cooperation cannot be taken for granted, as we have come to learn in recent times. Science cannot stand idly by while a terrible war is raging in our European neighbourhood. The humanitarian catastrophe resulting from the Russian attack in breach of international law not only poses a threat to the values of a free and democratic Europe. It has also called into question core values of international research cooperation, attacking academic freedom, the free and open exchange of ideas, and even trust between scholars.

The DFG and the Alliance of Science Organisations in Germany therefore have condemned the invasion of Ukraine in the strongest terms possible and immediately suspended cooperation with Russian institutions. This far-reaching measure is a direct expression of our deep sympathy and solidarity with Ukraine. In addition,

we must ensure that Ukrainian scientists and scholars are offered lasting perspectives. That is why we have opened several DFG funding lines and established tailored new lines of individual support, while also being strongly committed to preventing brain drain and rebuilding research structures within Ukraine, hand in hand with the National Research Foundation of Ukraine (NRFU).

With similar intentions, it is important to strengthen those forces within Russian academia that are so courageously calling for an end to the war. Although institutional dialogue may be temporarily interrupted for the time being, we strive to keep open individual channels of communication between German and Russian scholars in order to foster a swift re-opening of the previously stable bridges of science and scholarship to Russian society when peace is eventually restored.

Scholarly dialogue has always been about sharing knowledge and overcoming borders—not just intellectual borders but also those imposed by nations and political systems. As such, the return of nationalistic imperialism to Europe is actually prompting us to intensify our collaborative networks, both inside and outside Europe.

6 United by Responsibility

From the DFG's perspective, all these measures form part of our responsibility as research funders. The notion of responsibility also gives us an indication of what "united by science for a better tomorrow" could mean in this situation. Above all, it means that today—perhaps more than ever—we need to ask ourselves how we can organise science so that its findings contribute to increasing peace and prosperity.

First, this responsibility involves fact-oriented yet clear science communication. All the forces within society—science, civil society, policymakers, and businesses—need to communicate, explain, persuade, and engage in dialogue with each other more openly, more effectively, and more efficiently. It is through such dialogue that we will be able to leverage existing resources and create synergy effects.

However, to actually listen and not just talk to each other requires trust. This is why the trust scientists and researchers have gained in society at large over the past pandemic years presents us with a great opportunity: it is a gift for an enlightened, knowledge-based society. And this increase in trust has come about particularly due to the outstanding commitment demonstrated by individual scientists.

This trust is not something that can be taken for granted: it has to be earned anew every day. Living up to it is—again—a question of communication, which must be transparent, prudent, consistently objective and on an equal footing with its addressees. That said, it is also a matter of allowing multiple voices to be heard, and of weighing up findings and arguments within the research fields themselves. This diversity must be preserved—even when faced with the expectation of unambiguousness. This leads us to a second facet of scientific responsibility.

Apart from trusting communication, scientific responsibility also rests upon an understanding of politics and science as being different forms of rationality: in the political sphere, swift action is required, and democratic legitimacy has to be

established based on majority support. By contrast, science seeks insights and pursues truth. In this way, science provides an indispensable basis for political deliberations and democratically legitimised actions. But by no means does it justify or authorise such actions. Here, responsibility must not be mistaken for accountability—for good reason, since the poles between science and politics cannot be broken down, nor do they have to be. Both science and politics are an integral part of our society.

Accomplishments such as the development of the coronavirus vaccine depend on how politics and society, science, and research funding work together and to what extent all the available dimensions of diversity and combinations of ideas, idea providers, and procedures can be activated to create something that is genuinely new.

The DFG takes account of the concerns of cutting-edge research and its global competitiveness. In doing so the DFG enables high-risk research in a positive sense while being mindful of the timeframes that such activity requires. By rigorously observing the criteria of scientific quality in its review and evaluation processes, the DFG helps ensure that scholars, policymakers, and society as a whole have a wide range of advanced scientific options at their disposal in case of acute need—an invaluable store of knowledge from which evidence-based solutions to concrete problems can swiftly emerge when needed.

In general, funding organisations like the DFG take on the role of an intermediary in this dynamic ensemble. They shelter and foster both scholarly curiosity and integrity, because scientific autonomy provides the best foundation for a responsible and successful interplay between science and politics, both nationally and internationally. And the DFG will continue to do so in the future.

Thank you very much!