

New Year's Address

by the President of the Deutsche Forschungsgemeinschaft

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- Check against delivery! –



Welcome to the DFG's annual New Year's reception! It is both an honour and a pleasure to celebrate the beginning of this year together with you and to wish you a happy new year.

Please allow me to extend an especially warm welcome at this point to our guests and partner organisations from abroad. It is a pleasure to have you here tonight, and I wish you all the best for the coming year. Your presence is truly appreciated by the German Research Foundation as evidence that our partnerships build on common ground, and I thank you for your goodwill and support in promoting international cooperation.

1.

Esteemed guests, dear friends and partners of the DFG, I would like to combine my new year's wishes with a few personal thoughts on the topic of digitalisation and digitality, a prominent political topic. The timing of this topic may surprise you since we've just begun a year in which the political course for Germany and the course for the sciences and humanities as well have yet to be set. This time is also marked by worrisome shifts in the relationship between science and society, shifts that we have addressed strongly in the past months and presumably will continue to do so in the future. Despite this, allow me if you will to focus on digitality, a topic that is not small and certainly not marginal. Instead, it is one full of opportunities that will change our very existence and the sciences and humanities, perhaps more than many other things. For what we are experiencing is what I refer to as 'Weltenwandel', fundamental and ongoing change brought about by technological advancements but affecting all areas of society.

So let us begin our discussions about science and the humanities in the digital age. How nice that you are present this evening. Not just being connected electronically, or represented virtually, but being present physically – and intellectually. By actually being present (and not constantly looking at your smartphone), you are embodying a certain anthropological human resistance in the face of both the promises and the apocalyptic visions of technological virtualisation. You are demonstrating that community and society are more than the exchange, collection and algorithmic scrutiny of large volumes of data.

It is by no means possible to reduce everything social – personal encounters or engaging with one another in conversation, for example – to something digital or digitised. On the other hand, it is naturally no less reductionist how we occasionally deal with digitality in science, and also in politics, when we have to abbreviate it to technical catchphrases such as Industry 4.0, broadband roll-out, tablets for primary schools, artificial intelligence or data science.

What we refer to here as digitality is far more complex. The opportunities and responsibilities associated with computerisation (Charles Babbage), with texts, images, sounds and things becoming digital (Alan Turing) and with the ubiquitous networking of all the foregoing on the internet have a far deeper and broader impact than the catchphrases would indicate; we are no longer even certain of what constitutes the human condition, which I just mentioned.

The social dimensions of the digital, too, are thus far too complex to be equated with purely technological questions. Rather, they concern earnest questions about individuality and collectivity, about economy and society, about the state and law, about knowledge and power. And, of course, questions about the sciences too.

We must therefore take digitality seriously as the designation for the *Weltenwandel* that is as dynamic as it is comprehensive. And this change confronts us in a dramatic fashion with the same experience that Søren Kierkegaard encapsulated at the start of this modern age when he said that, although life can only be understood backwards, it must be lived forwards. We live in this era of transformation and, knowingly and unknowingly, help shape it, and yet it remains opaque and in many ways incomprehensible to us. At the same time we act – amid an excess of information – under the conditions of a serious lack of information and dramatic uncertainty. The only thing it seems we can depend on is the prospect that linear extrapolation of what we already know will not succeed in predicting the future. It will certainly be different from what is promised by the utopias or threatened by the dystopias.

Incidentally, this is already the case, because *Weltenwandel* through digitality will neither come to an end in the foreseeable future nor allow itself to be objectively limited. In other words, it does not have the profile of a ‘problem’ for which something approaching definitive ‘solutions’ or even the

'one' and only solution might be found. For this reason, we cannot help but repeatedly reduce this *Weltenwandel* in each case to questions, e.g., of technology or innovation policy (Industry 4.0) or investment (roll-out of broadband networks) or legal policy (Network Enforcement Act, Ethics Commission Automated and Connected Driving), education (digital literacy) or democratic policy (structural transformation of the public sphere, e-democracy), etc. We certainly cannot avoid such policy operationalisations, but at the same time they fail to capture the breadth and dynamism of digitality as both a technological and social *Weltenwandel*.

2.

Now, these constellations of digitality and sociality, of the necessity to act, open goals and uncertainty naturally also define the sciences and humanities, and research administration, research funding and research policy are no less concerned with them.

Research is playing a crucial role in driving this *Weltenwandel* – for example in mathematics, computer science, materials sciences or new fields for which we at present use the imprecise term data sciences. Upon closer examination, the question quickly arises as to whether publicly managed and funded research is still adequately important and competitive compared to industry research by the internet giants (Alphabet, Amazon, Facebook, Apple, Microsoft).

At the same time, the sciences and humanities, just like all other parts of society, are also subject to this *Weltenwandel* which they are helping to advance – with all the unpredictable opportunities for knowledge and challenges that follow from this. What we call 'research' is, after all, a concept with historical origins. It is therefore changeable. And through digitality research is being transformed in that previously analogue data is becoming available in digital form, making it processable with new methods and research questions. In addition, data-intensive technologies, for example in the life sciences or physics, are making completely new forms of research possible in the first place. At the same time, established forms of research are being replaced; it is apparent throughout entire scientific disciplines, for example, that instead new mathematical methods are gaining in importance.

And here we move from questions, methods and research practices to the transformation of that which can fundamentally be understood as research and science from an epistemological perspective, and that which constitutes the preconditions and circumstances of its practice from a sociological point of view.

So what is 'research', 'knowledge', a scientific 'argument', 'proof' or 'evidence', if the line between correlation and causality becomes blurred or 'algorithms' take the place of 'theories'? If – for example – an experiment is replaced by a digital simulation; if a neo-positivist faith in numbers that

can no longer discriminate between the possible unambiguous nature of data, the controversial nature of its interpretations and the ambivalence of its social consequences of action comes to dominate; if the research result is owed to an algorithm which is, in turn, the result of processes of machine learning.

And such epistemological shifts are immediately followed by questions from the sociology of science. Because what remains of a research ‘achievement’ if thinking begins to be automated? How is it attributed to an individual? What will scientific reputation be based on in the future? Not to mention the legal and financial questions that arise: Who is responsible for the research? Who is liable for its consequences? How will this be regulated legally? And financially and economically?

As you can tell, ladies and gentlemen, you are at a New Year’s reception hosted by an organisation engaged in the research system. And in this system, in many respects questions are taken more seriously than answers. It is not what we already know that drives us, but our not knowing, and our quest to know. For this reason I will continue my questioning for a moment longer. Because together with the epistemological and sociological questions about research that the digital age poses – including those about good scientific practice, the publication system and its economics, and not least research ethics – new challenges for research administration and research policy naturally also emerge. And from a research funder’s perspective: what do all these questions imply for science-driven research funding? How will committee members’ and reviewers’ understanding of scientific achievement and the quality of project proposals change? Must an organisation like the DFG react to this? And, if so, how could it possibly do so?

Allow me to mention, if only for a moment, the radical nature of digital transformation here too and to point out that the entire funding system, not only that of the DFG, relies on the fact that all funding decisions rest on the participation of scientific peers. But are their powers of judgement irreplaceable? Could funding decisions not also be automated, that is, be taken on the basis of algorithms that rank the project proposals? In that case we at the DFG could make do with a small number of administrators and an IT support group. However, the incentives to optimise project proposals through algorithmic streamlining would be unpredictable, just as the consequences for quality and originality of research would probably also be. But above all, would not such automation come at the price of weakened justifiability and transparency of funding decisions – and hence a loss of legitimacy?

3.

What appears obvious to me is this: the *Weltenwandel* that we call digitality is quite the challenge from a research administration and research policy point of view. The knowledge regimes and the

social orders of science and scholarship, the epistemic, economic, financial, legal and policy aspects of this transformation influence each other in many different ways. They must consistently be considered in their complex and contingent interrelations.

And this latter requirement is one in which a particularly prominent attempt to shape the *Weltenwandel* in terms of research policy appears to fail. I am referring to the so-called 3O Strategy as developed by Commissioner Carlos Moedas in the name of the European Commission over recent years. Using the motto of Open Science, Open Innovation, Open to the World, the strategy is turning the technical level of digitalisation currently achieved into a benchmark of research policy programme-making. Yet the ideological catchphrase open is more likely to obscure the openness and unpredictability of the *Weltenwandel* than to address its conceptualisation seriously and get it moving in the right direction from a policymaking standpoint.

We are talking about an extremely complex field. Its problems harbour enormous opportunities and equally sizeable challenges and risks – not the least of which concern research. The mere promise of openness does it just as little justice as do apocalyptic dystopias or interest-driven promises that fantasise about freedom from all the shortcomings of existence through digitality.

As a funding body and as the self-governing organisation of science and research in Germany, the DFG has a responsibility in this area. We are resolved to fulfil this responsibility in three ways: Firstly, by initiating forums and supporting subject-specific reflection on digital transformation in all areas of science and the humanities (and what subject-specific means here will itself change under the conditions of digitality). Secondly, under these conditions our funding activities, instruments and procedures will need to be further refined. And, thirdly, the DFG will face new responsibilities in advising government and society with respect to the development of the sciences and humanities in the digital age.

In order to do justice to this threefold responsibility, we are carrying out a comprehensive project over a number of years at our Head Office. In addition, the DFG's Executive Committee will appoint a high-level expert commission to address science and academia in the digital age, and we will also attempt, with other organisational forms, to support the advancement of the digital transformation of the sciences and humanities.

We are, however, guided in this process by the view that what will still matter in the future will be research in the sense defined in constitutional law as a specifically professionalised form of the free, methodical search for the truth. Research continues to require public sponsorship and funding – in the data sciences as well. And these must be implemented legitimately in the form of funding decisions that are based – and will continue to be based in the future – on the (non-automatable) human capacity for judgement.

4.

Such capacity for judgement is not simply a given. It remains a quest. This capacity must be nurtured, and it requires the necessary scope for institutional freedom in order to develop. Without it, there would be no ability to attribute research achievements and no justifiability of funding decisions, which are central to the DFG. The complex interwovenness of the technological, epistemological and social aspects of all things digital cannot simply be disregarded digitally. Many requirements must be met for productive and fascinating research, which at the same time has to justify society's trust; I've addressed this topic in other contexts in the past.

Let us jointly address the tasks facing us in shaping the sciences and humanities in the digital age; these tasks involve action and insight alike.

And for this as well I wish you a peaceful and happy new year full of vigour and creativity, but also with the time for self-reflection; may this year be replete with many fulfilling moments and enriching discussions. Perhaps our conversations tonight will furnish the first of these.