

– check against delivery –

Professor Dr. Hans-Christian Pape, President of the Alexander von Humboldt Foundation

Humboldtians, ladies and gentlemen,

Once again, I should like to express a warm welcome to you and your families.

At the beginning of my welcome address I spoke about the responsibility that we as researchers bear and how we can help to make the world a better place.

We have just heard two such examples from our Alumni Award winners: researching into clean energies and understanding and dealing with the impact of climate change.

This conference is a chance for you to discuss scientific and social challenges, pursue scientific dialogue and share the exciting topics you yourselves are addressing. Dialogue like this across disciplinary boundaries often generates new ideas, collaborations, networks. So, do make use of this opportunity.

I also spoke at the beginning about the boundaries at which we conduct research, the ones we set ourselves and the ones we want to cross. I should now like to build on this.

As a physiologist and neuroscientist, when I hear the word “boundaries” I immediately think of our organism in which some six trillion individual cells form a highly complex system of borders and interfaces.

It is these boundaries that allow specialisation and diversity. They are the prerequisite for the formation of tissue and organs as well as for the differentiated functioning of the kidneys, the heart and the brain. They are the essential foundation of our existence as living creatures, as humans and as personalities.

But these boundaries are not rigid or impenetrable. On the contrary: communication between cells and tissue, between the interior and the exterior, is a precondition for homeostasis and hence for the life of the organism. At a higher level, this communication is a precondition for behaviour, for social interaction, for ethical and moral norms.

When we hear the word boundary, however, many of us think of other boundaries: state borders, passport controls and barriers.

The German historian, Jürgen Osterhammel, describes this as follows: “The history of a nation’s relations with its neighbours expresses itself in borders. The borders of state sovereignty are almost always symbolically marked: by posts, watch towers, border architecture. Political boundaries are therefore concrete: the physical objectification of the state and places where rulership is solidified both symbolically and materially [...]”

Thus, in addition to material borders there are also what we might call symbolic boundaries and these are sometimes much more immovable and stable than

material state borders (and often much harder to cross) – boundaries that are set by cultural ties, socialisation or imprinting and, last but not least, by language. Boundaries of this kind often outlive changes in actual political borders. You will all be able to think of examples – too many examples, in my opinion. It is these borders, the ones that are often associated with all too one-sided collective notions, that we need to cross.

And you, our Humboldtians, cross these boundaries through and during your activities in Germany. You contribute far more than your academic expertise: you share your cultural imprinting, your conceptions, values and experiences; in short, your whole personality.

Because when we cooperate on research, we always automatically cross the boundaries between experience and tradition, cultural and collective notions. Crossing boundaries in this way is not always easy, especially as, in evolutionary terms, it challenges the oldest parts of our brains. They give preference to what we know and are programmed to react instinctively to anything unusual or surprising, first and foremost with a defensive or flight response. This was a real bonus for our stone age ancestors who had to be prepared for a rustling in the undergrowth to reveal a sabre-toothed tiger poised to attack and be ready to flee. And it has its uses today, too, although, unfortunately, these archaic brain patterns sometimes get in our way.

It's no easy decision to leave your accustomed professional environment – nothing for the faint hearted. It takes courage to leave everything behind and re-locate lock, stock and barrel with your partner or, indeed, with your whole family. You have to make new contacts, find new friends, somewhere to live, schools, kindergartens. And you also have to contend with German, with German authorities and with German forms.

This can all be extremely enervating.

But it is worth crossing borders. The rewards are inspiration, trust, new perspectives, new connections and friendships, scientific collaborations that help to identify boundaries and to cross them. This is what the Humboldt Network stands for – and you are now a part of it.

We invite you to make full use of this network. Follow the example of the man after whom our Foundation is named, Alexander von Humboldt. At a very early stage, he championed collaboration in international networks like virtually no other. He was a true pioneer and proved in both his life and his research what this can produce.

This coming September, he would have been 250 years old. We believe he is as relevant today as ever. You can discover more about this on our anniversary website www.humboldt-heute.de/en.

Visit us there and help to celebrate his birthday by telling us what you associate with Humboldt today.

Or simply enjoy the contributions of all those who have already taken part, including Humboldtians, politicians, journalists and, indeed, the German Chancellor Angela Merkel. Join in, you'll find yourself in good company.

Ladies and gentlemen, allow me, finally, to consider one other aspect of boundaries. Science can and should cross boundaries, but boundaries are also necessary. We constantly set them in order to narrow down research topics and make them manageable – but there is also the aspect of legal and ethical research issues.

“What has once been thought cannot be unthought,” wrote the Swiss dramatist, Friedrich Dürrenmatt, in his 1961 play *The Physicists*. Against the backdrop of the

atomic bomb dropped on Hiroshima, he reminds researchers of their responsibility for the social impacts and ethical boundaries of their work.

I believe the challenge has become no less great over the years. We must explain what we as researchers do and what we can do (and, above all, what we cannot do).

We must beware of making promises about progress that we can't keep because, on the one hand, promises of this kind put far too much pressure on us to achieve whilst engendering excessive expectations on the other. This is the responsibility we owe to society. Trust is quickly lost, but very difficult to regain.

Help to bridge the boundaries between science and society – search for new ways of entering into dialogue and reinforcing trust.

Let's be sensitive and listen when we are challenged. Let's be attentive when issues go beyond the boundaries of our own disciplines.

One example is research on artificial intelligence which addresses questions for which there are no simple technical answers.

To what extent do we want to make use of machines that are not only intelligent but can also act morally? With the inevitable impact on our social existence that this will bring, what changes are we prepared to accept? What role do we want to allow natural, intellectual, emotional, social intelligence? What role will humans play beyond that of making a flawed contribution?

Although the boundary between humans and machines already seems to have been crossed, behaviour at this interface still needs to be resolved. The ethical dimension of AI research therefore examines which boundaries we want to cross, not which ones we can cross.

Once again, boundary lines are anything but straightforward. And questions of this kind are certainly not just academic: AI is already being developed for areas of application that deal with physical integrity, freedom of movement, human dignity.

The goal of artificial intelligence to serve humans precisely on the borderlines of existence can only be achieved through interaction between disciplines. For this, interdisciplinary networks like the Humboldt Network provide an ideal arena.

Ladies and gentlemen, Humboldtians, let us take advantage of this conference and our network in this sense: to explore and, above all, cross the borders – in our encounters and discussions in the coming days, in our cooperation and in our own research.

I hope you will all acquire exciting, surprising insights and I wish you every success for your research stay. Above all: enjoy yourselves and have a wonderful time together at our annual meeting of the Alexander von Humboldt Foundation.

Thank you for your attention.